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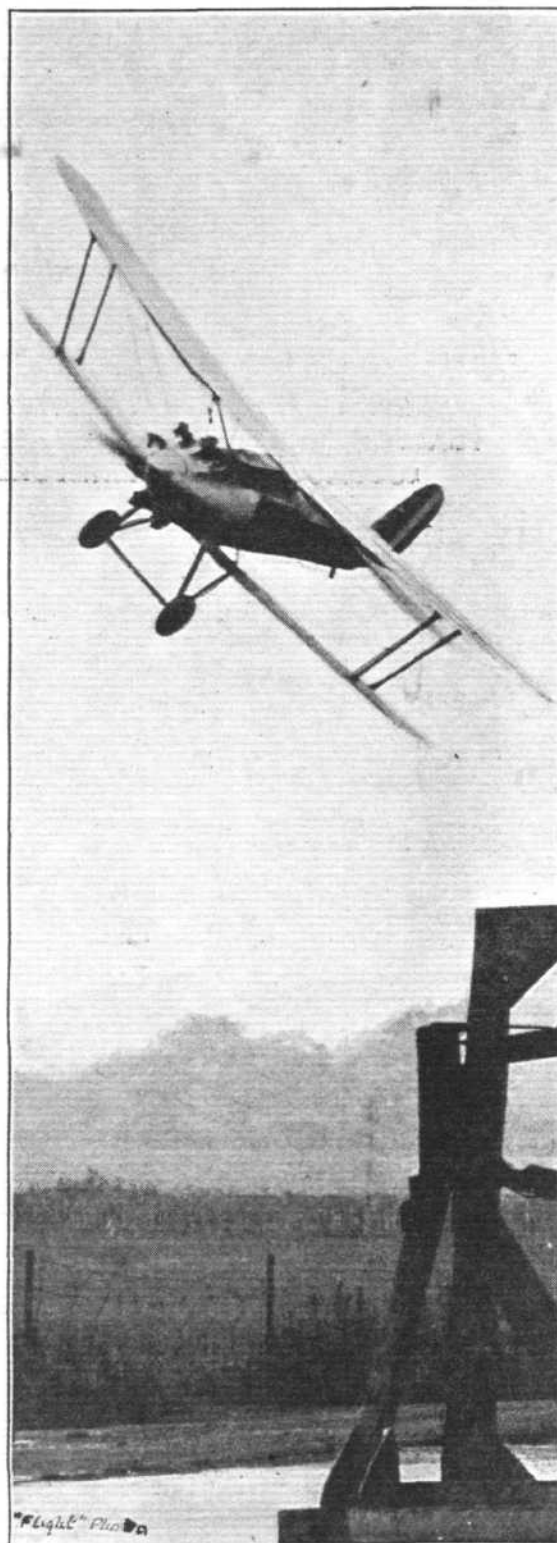
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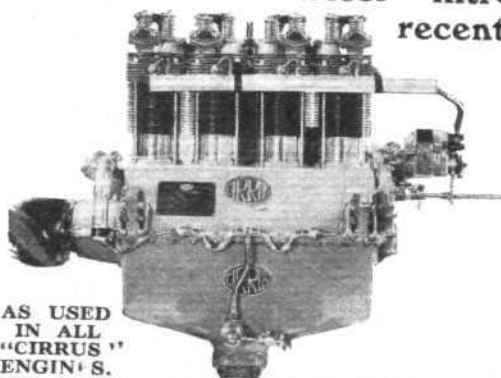
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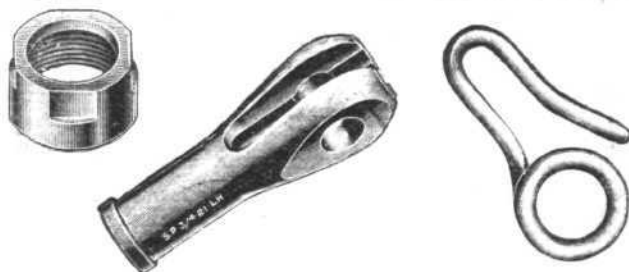


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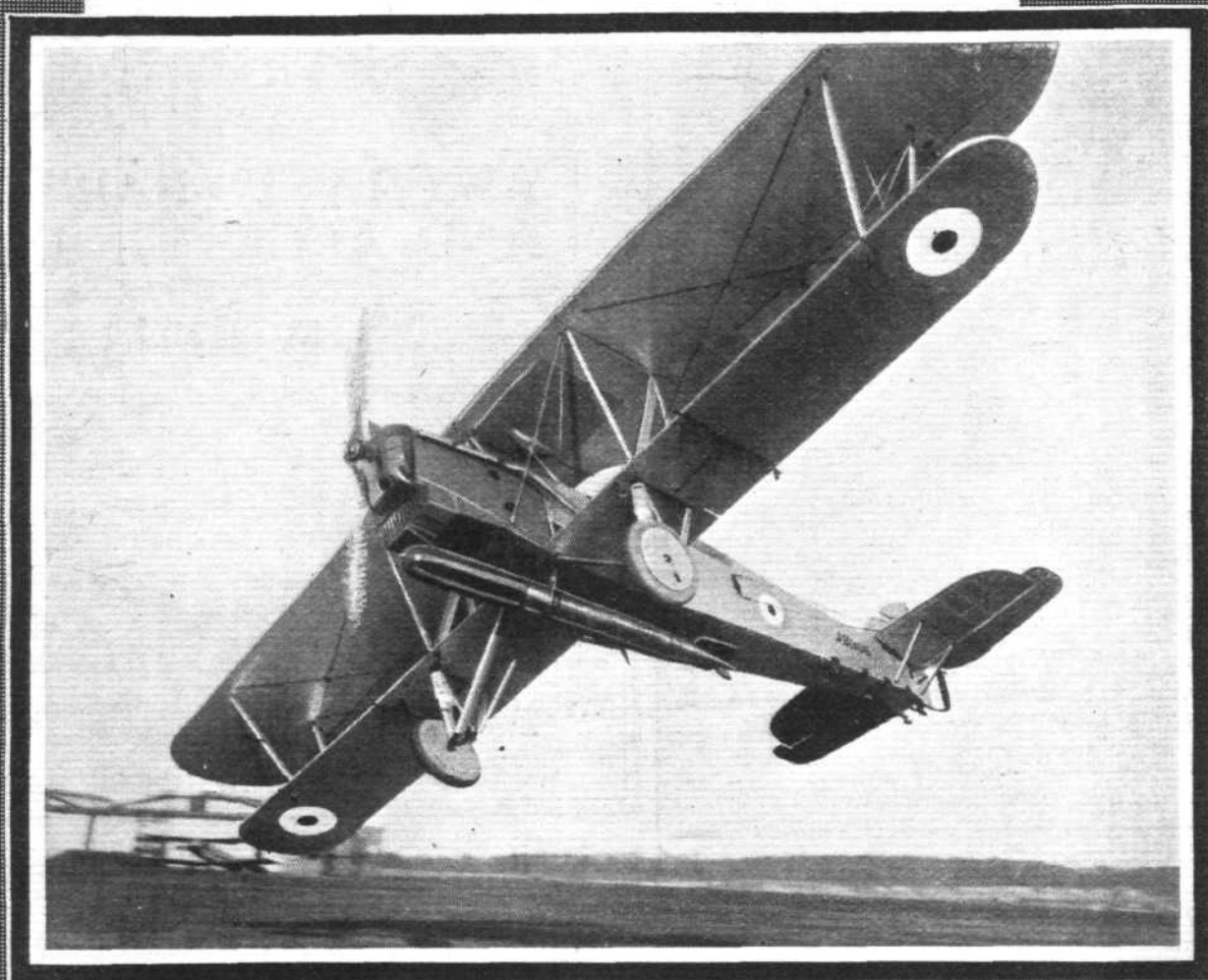
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CONTENTS

Editorial Comment :	PAGE
The Far East Cruise	37
Blackburn "Bluebird"	39
New Parachute Tested	45
Eddies	46
Private Flying: Testing American Aircraft: By Lady Heath	47
Light 'Plane Clubs	48
Antarctic Exploration by Air	50
Airisms From the Four Winds	51
R.A.F. Far East Cruise	52
Personals	54
Royal Air Force	55
Notices to Airmen	55
Correspondence	56
Imports and Exports	56

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1929

Jan. 24	R.Ae.S. and Inst.Ae.E. Dinner and Discussion on "The Compression Ignition Engine for Aircraft," St. Ermine's Hotel.
Jan. 31	Lecture, "Monoplane or Biplane?" by W. S. Farren, before R.Ae.S. and Inst.Ae.E.
Feb. 14	"Air-cooled Engines in Service," by A. H. R. Fedden, before R.Ae.S. and Inst.Ae.E.
Feb. 28	Lecture, "The Flutter of Aeroplane Wings," by R. A. Frazer, before R.Ae.S. and Inst.Ae.E.
Mar. 7	Lecture, "Airscrew Body Interference," by C. N. H. Lock, before R.Ae.S. and Inst.Ae.E.
Mar. 14	Lecture, "Engine Performance Tests," by Wing-Comdr. C. B. Hynes, before R.Ae.S. and Inst. Ae.E.

EDITORIAL COMMENT



The Far East Cruise

ALTHOUGH it is to be hoped that the more technical aspects of the Royal Air Force Cruise to the Far East will be dealt with at a later stage by the Commander of the Cruise, Group-Capt. H. M. Cave-Browne-Cave, in a lecture to the Royal Aeronautical Society, the official log of the last stage, the first part of which we publish this week, contains sufficient information to be of surpassing interest. In our issue of December 13 last, we referred briefly to the cruise, at the time when the Flight reached Singapore after having visited and circumnavigated (or should it be circumaviated?) Australia. At the time no very accurate figures were available as regards hours flown, mileages and average speeds over the concluding stage. The official log gives this information and the official figures are extremely satisfactory in every way.

The four Supermarine "Southampton" flying-boats (with metal hulls), each fitted with two Napier "Lion" engines, covered a total distance during the flight of about 22,600 statute miles. This figure does not include a further cruise of about 4,500 miles to Hong Kong, so that with this added, the total mileage is increased to no less than 27,000 statute miles, or 108,000 machine-miles. As the same aircraft and the same engines were used throughout the cruise, this mileage is eloquent testimony to the quality of British aircraft and aero engines. And in his covering report the Commander states that neither aircraft nor engines have given any trouble of any consequence, and have caused no forced landings. 108,000 machine-miles without a single forced landing represents a record of reliability of which Great Britain has cause to be proud.

The total flying time of the cruise since leaving England has been 284 hours 35 minutes, which means, of course, that each of the eight Napier "Lion" engines has run for that length of time, and between them the eight engines have totalled some 2,276 hours, a sufficient length of time to have given a less reliable engine many opportunities for "going on strike." Yet the entire absence of forced

landings proves that as usual the "Lions" kept roaring so long as they were being properly fed.

It is noticeable that the average speed made good over the ground (or sea) was markedly higher on the last stage. Whereas on the England-Karachi stage the average ground speed was 67 knots, and between Karachi and Singapore it was 66 knots, the average from Singapore to and around Australia and back to Singapore was 72 knots, or 83 miles per hour. This is an extremely good average, and is probably more representative of the aircraft than were the previous average speeds, which were reduced by very strong head winds.

As regards the metal hulls, it is interesting to find in the report of the Commander the statement that the water-tightness of the metal hulls and wing-tip floats has been excellent, and that the corrosion of rivet points in the hulls, and the deposits of barnacles below the water line has been much less than on the earlier stages of the cruise. What the reason for this is, is not clear at the moment, but will doubtless be explained when, as we hope, the Commander of the cruise gives his lecture on the technical aspects. At least it seems clear that neither corrosion nor barnacles are likely to prove serious obstacles during the regular operation of a commercial Empire service. It will be recalled that in previous sections of the official log, Group-Captain Cave-Browne-Cave reported that when the accumulation of barnacles was at its worst, the length of run necessary to take off was greatly increased. Evidently it did not prevent the machines from taking off. And when the deposit was removed, the take-off run of all machines returned to normal. The statement that the water-tightness was satisfactory indicates that what little corrosion did take place could not have been of a very serious nature, otherwise the water-tightness would not have been satisfactory. Altogether the official log gives one the impression that the fears which were, we know, entertained in some quarters concerning Duralumin hulls have not been proved well founded, and the performance of the four "Southamptons" gives one still greater confidence in the future of the metal flying-boat for Empire air communications. It would seem that most if not all of any doubts that may have been entertained on technical grounds have now been settled, and if that is the case, the only causes for delay in establishing Empire flying-boat services over suitable routes are political and financial, and not technical.

As "The Seaplane Journal," FLIGHT is naturally extremely gratified to have been thus proved correct in its championship of the seaplane, and more particularly the flying-boat, as the logical type to develop for the British Empire. The Air Ministry, the Royal Air Force, and more particularly the Far East Flight, are to be congratulated on having furnished this very convincing proof of the reliability and practicability of the flying-boat.

It is impossible to read the official log without being impressed by the frequency with which occurs the phrase "sheltered water suitable for emergency landings was found all along the route." This fact again should be of the greatest possible value, not only for service flying but even more so for commercial air routes, and the information which the Far East Flight has accumulated during the cruise should be of the very greatest assistance in planning such routes in the future.

It is impossible for us to refer in detail here to the various minor adventures which befell the flight. One such, however, is of considerable technical significance, and deserves to be noted. During the flight from Klabat Bay to Batavia, S.1151 alighted owing to the catching fire of an accumulator which was being charged, and the fumes from which choked and blinded the pilot. The sea was rough, but S.1152 alighted to find out whether assistance was required. The burning battery was, however, extinguished, and after a short delay, the flight was resumed. Two interesting facts emerge from this incident. The absence of petrol in the hull is a great safeguard against fire. Had the hull been more or less filled with petrol tanks, it is probable that the consequences would have been more serious. Secondly, it will be noticed from the log that both S.1151 and S.1152 took off again successfully in a 4-ft. sea and a 15-knot wind. While sailors walking the deck of a large liner would probably not regard a 4-ft. sea as worth even mentioning, it is a pretty good feat to take off in such a sea with what is after all a very small craft. That the success of the take-off was not due to the machines "flying light" is evidenced by the statement that both machines were at the time each carrying 180 gallons of fuel.

Altogether, the official log of the Far East cruise is one of the most interesting documents which it has been our privilege to publish for some time; and we would recommend our readers to study it closely.

Magnificent Gift

MR. DANIEL GUGGENHEIM, the copper magnate, has given £100,000 for the development of aviation in Chile. He would like to see an aviation school established, but leaves the disposition of the money in the hands of the Chilean Government. Mr. Guggenheim's family holds large nitrate and copper properties in Chile.

Lady Bailey

OWING to continual bad weather between London and Paris, Lady Bailey was delayed at Paris until January 14 after her arrival there on January 6 following a successful 18,000-mile aerial survey round the African Continent in her Cirrus-Moth, which we described fully in our last issue. Continual fog has spread over the Continental air route across the Channel lately, affecting all air traffic. She left Le Bourget on January 12 soon after noon, but was obliged to return. Another start was made on January 14 at 1 p.m., and she passed over Abbeville 1½ hours later, but on reaching the coast she found the Channel still impassable, and a landing at Berck-sur-Mer was necessary at 3.15 p.m. On January 16 she started on the last stage to London.

To-day, Thursday, January 17, a luncheon will be given to Lady Bailey at the Savoy Hotel at 1 p.m. by the Royal Aero Club, Royal Aeronautical Society, the Air League of the British Empire, and the Society of British Aircraft Constructors.

Sqdn.-Ldr. Hinkler Awarded Gold Medal

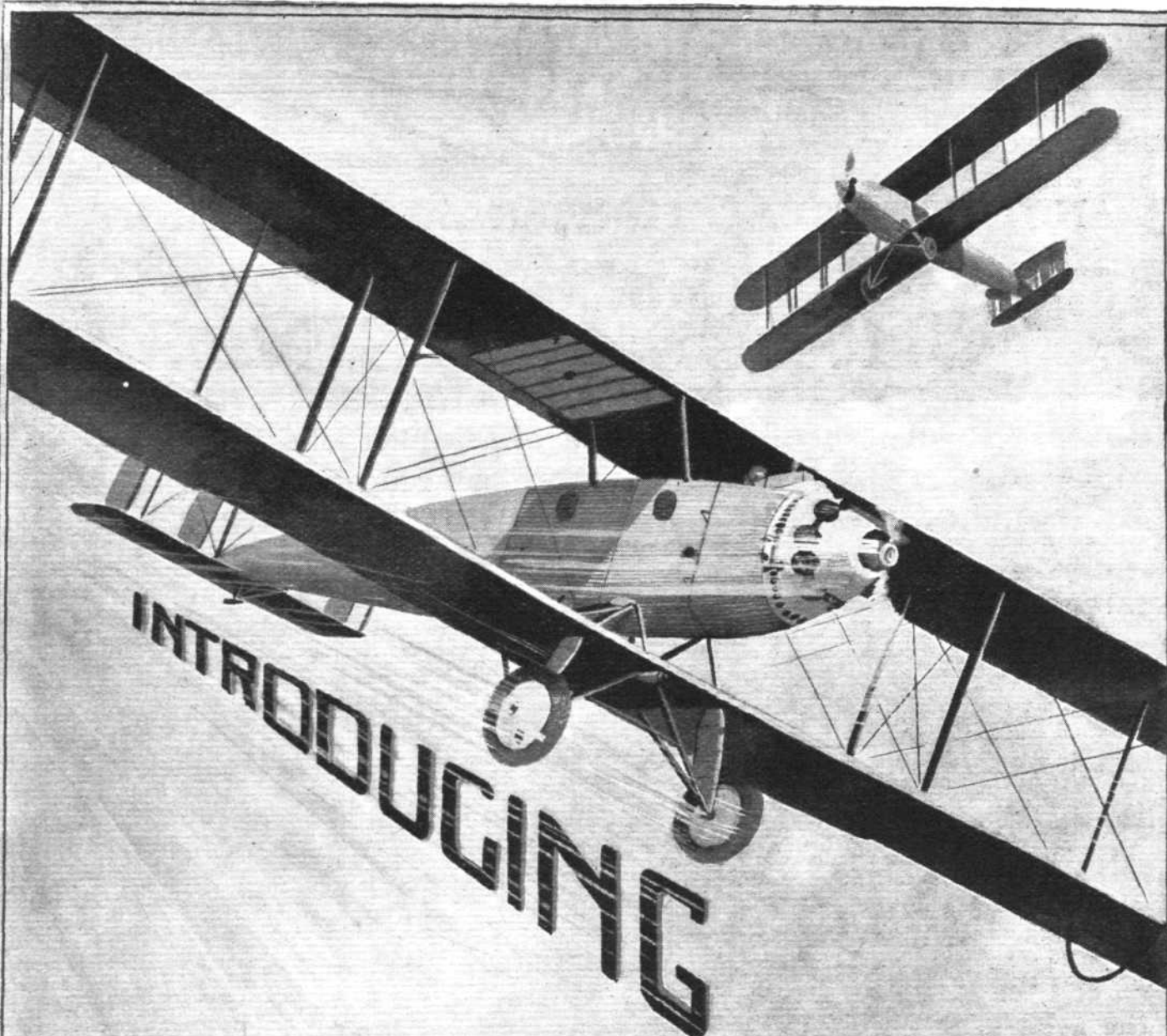
THE International Aeronautical Federation has awarded the Gold Medal for the finest air exploit in 1928 to Sqdn.-Ldr. Hinkler for his flight from England to Australia in the Avro "Avian" light aeroplane.

Schneider Contest

THE Royal Aero Club announce that the date fixed for this year's contest for the Schneider Cup is September 6 and 7

British Engines for Switzerland

Two important Swiss airlines have placed orders with Armstrong-Siddeley Motors, Ltd., for "Lynx" aero engines. The firms in question are, Ad Astra Aero Schweizerische Luftverkehrs A.-G. and "Balair" Basle Air Traffic, Ltd. The "Lynx" engines ordered will be of the same type as used on the Amsterdam-Batavia air service, and will, also, be fitted in Fokker machines.



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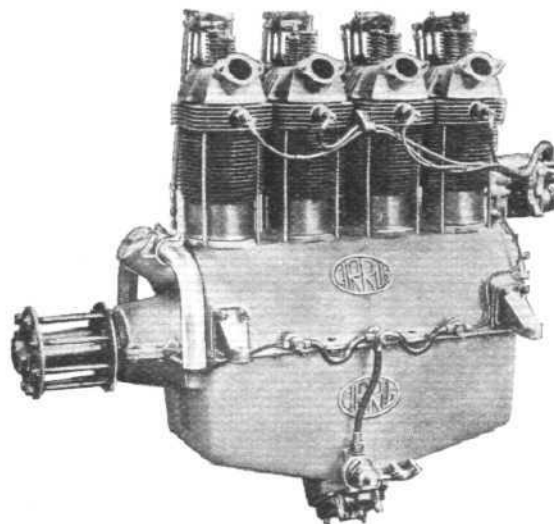
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Map showing route.



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THE BLACKBURN "BLUEBIRD" MARK IV

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Of all-metal construction, with side-by-side, or "sociable," seating arrangement, and with a choice of three power plants, the new "Bluebird," Mark IV, which is now nearing completion at the Brough works of the Blackburn Aeroplane and Motor Company, Ltd., should have a very wide appeal, the more so as the machine has retained the feature of the earlier models—interchangeable land and float undercarriages. At one time it was rather thought that the side-by-side arrangement of the two occupants would result in a loss of performance. Model tests in a wind tunnel have, however, indicated that this is not necessarily the case, and although the production type of "Bluebird," the Mark IV, has not yet been flight tested, there is every reason to expect that the top speed will be well over 100 m.p.h. More than that we need not say here. The actual performance figures will become available before long, and will then speak for themselves.

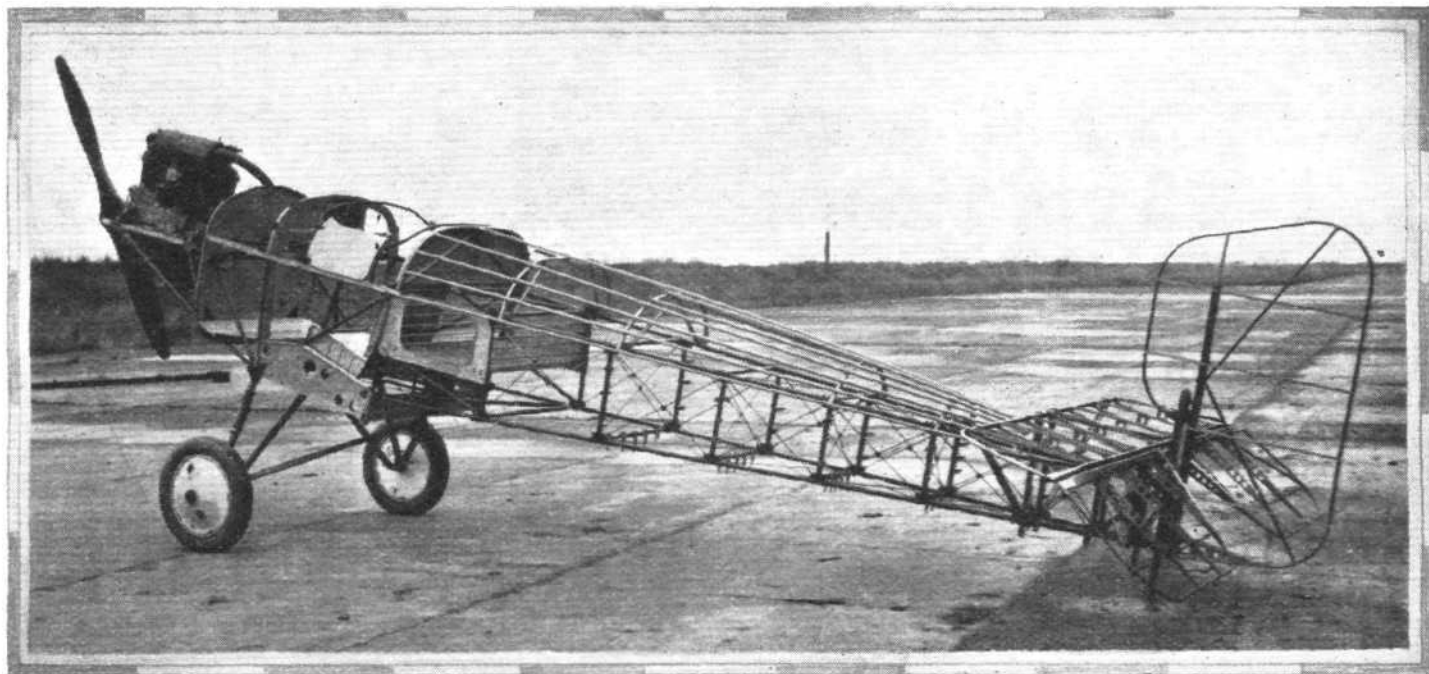
In designing the all-metal "Bluebird," the general lines of earlier models have been retained, but a number of

can be fitted with Handley Page automatic wing-tip slots on the upper wing. Ailerons (of the Bristol-Frise type) are fitted to the lower wing only.

Constructional Features

In the construction of the all-metal "Bluebird" the designers have displayed a good deal of ingenuity, and forms of metal construction have been evolved which are so amazingly simple as to remind one irresistibly of the well-known Meccano toy, translated into real engineering. Standardisation has been carried to a quite surprising extent, and the result is that the "Bluebird" should be capable of being produced both rapidly and cheaply. Yet the figures for empty weight given at the end of these notes indicate that this simplicity of construction has been achieved without any great sacrifice in structure weight. In fact, the production type all-metal "Bluebird" will be rather lighter than was the wooden model.

Fuselage.—In the construction of the fuselage the



["FLIGHT" Photograph

THE BLACKBURN "BLUEBIRD," MARK IV : General View of the fuselage in skeleton.

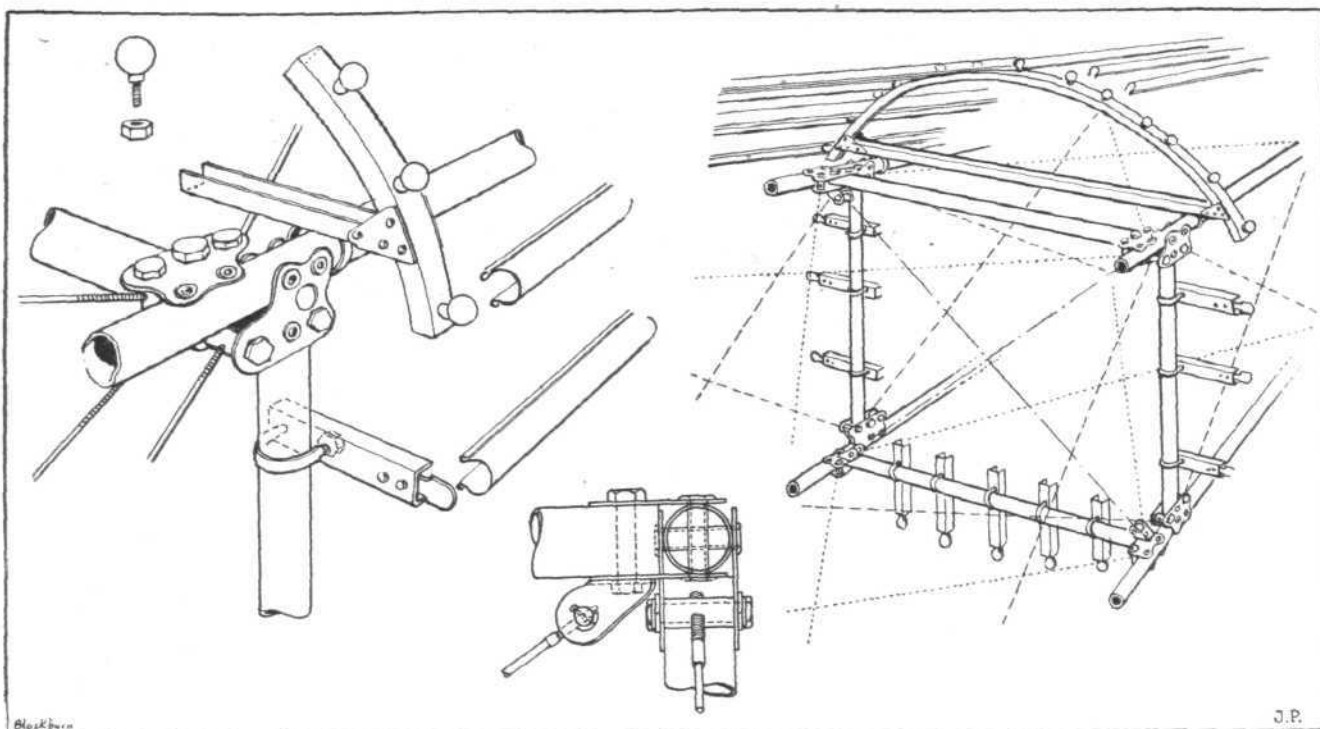
changes and improvements have been made, and the "lines" of the somewhat wide fuselage are extremely pleasing, and much better than one would have imagined possible with a side-by-side seating arrangement. The cockpit is by no means cramped, so that the good form has not been obtained by any sacrifice in this direction. For elementary school work it should be a considerable advantage to have the pupil placed next to the instructor, where conversation can be carried out comfortably, and where, moreover, the pupil can watch as well as feel the movements which the instructor makes with the various controls. For touring there can be little doubt that the "sociable" seating arrangement has many advantages, and as a sort of "conservatory roof" is to be an optional fitting on the production machine, those who prefer the shelter of a coupé will be able to fly in comfort in almost any kind of weather.

Of the aerodynamic design little need be said, as this follows in the main the earlier wooden machines. Attention has already been drawn to the fact that by making use of the wind tunnel, and experimenting with different "noses," it has been possible to reduce the drag of the machine to quite a low figure. The biplane wings are of normal design, but in the tail an innovation has been made in that there is no vertical fin surface. The rudder has a large balance, and is of large area, giving powerful directional control, even at large angles of incidence. If desired, the "Bluebird"

simplicity is exemplified by the use of but one size of steel tube throughout, with the exception of a tube in the engine bearer and one or two others elsewhere. In the rear portion of the fuselage this reduction is carried to the extent of length as well as diameter and gauge. This section of the fuselage is symmetrical, so that all four longerons are of the same length, whereas usually the lower longeron is longer than the upper, owing to its greater angle.

The vertical and horizontal struts are of the same diameter and gauge as the longerons, and the joint used is of very simple type, as shown in one of our sketches. Flat sheet steel plates and tubular rivets of fairly large diameter are employed for making the joint, the plates being shaped as shown in the sketch, and reversed for staggering vertical and horizontal struts in relation to each other. The diagonal bracing is by threaded tie rods, but in place of the fork ends usually employed, the Blackburn company makes use, not only in the "Bluebird" but in several other types, of trunnions which swivel in bearings in the flat plates. The arrangement is clear from our sketch. This form of terminal fitting is probably a good deal cheaper than fork ends, and should be quite as satisfactory in use.

In the forward portion of the fuselage a slightly different form of construction is employed. The fuselage, by the way, is in three sections, not counting the engine unit. The first extends from the engine bulkhead to just aft of the cockpit, the second from there to just in front of the tail, while the



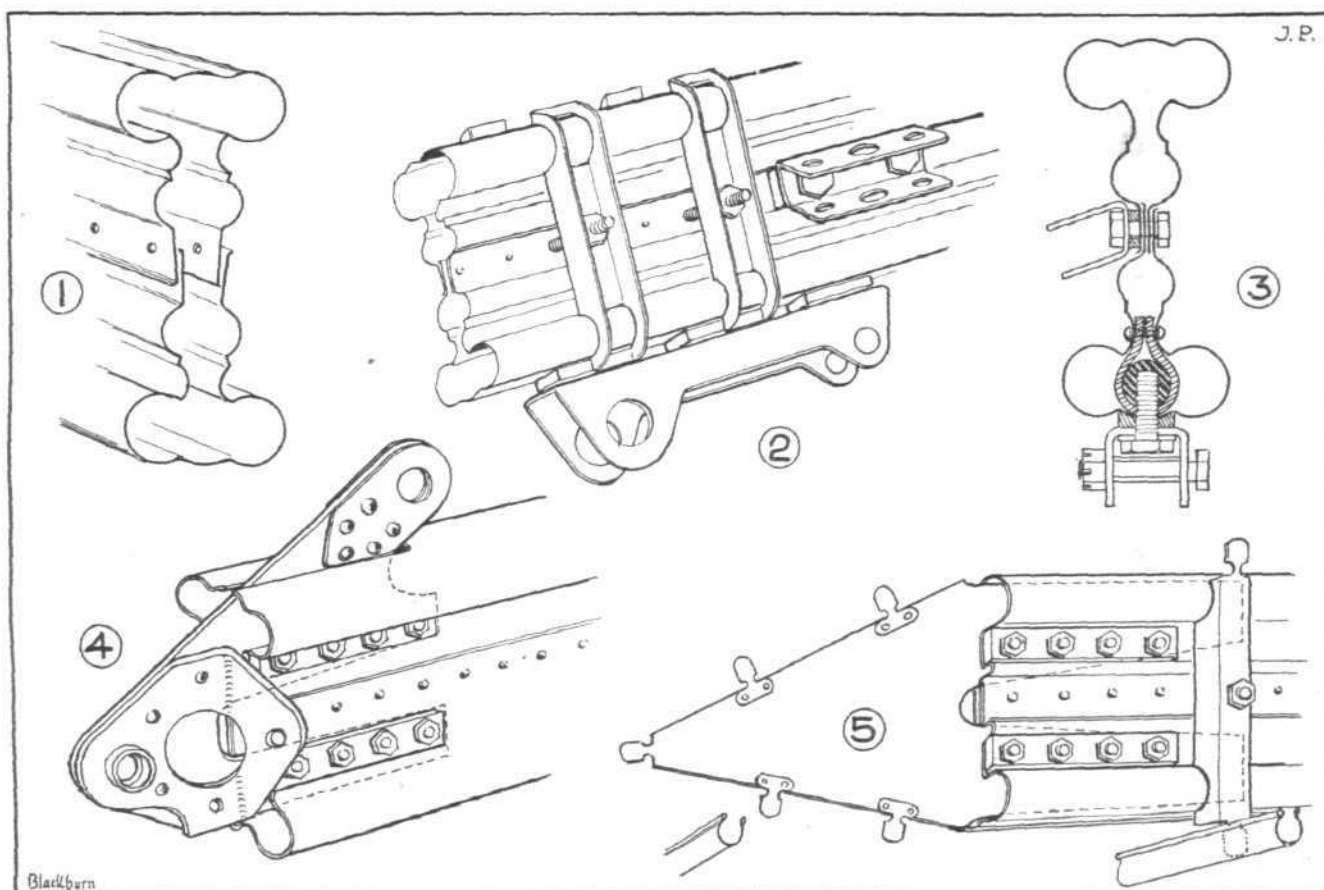
["FLIGHT" Sketches]

THE BLACKBURN "BLUEBIRD" IV : Some constructional details of the fuselage. The general arrangement is shown on the right, while on the left are shown the details of a typical joint, shown in section in the third sketch.

third forms the stern post, tail and skid attachment, etc. Longerons and side panel struts are of steel tube, as in the rear portion, but Duralumin frames are used instead of the transverse struts, while the side panel bracing is by diagonal tubes. The stern piece of the fuselage is perfectly symmetrical, and can, therefore, be put on "either side up."

The main fuselage structure is of rectangular section. This is changed into a rounded one by the addition of fairings

consisting of Duralumin stringers carried on short stubs clamped to the fuselage struts. The stringers are of rounded U-section, and are simply sprung into place on their supporting stubs. Apart from simplicity and rapidity of erecting, this arrangement has the advantage that when, after many months of service, the fuselage is stripped for thorough inspection, the stringers can be removed in a few minutes, giving access to every detail of the main fuselage structure.



["FLIGHT" Sketches]

THE BLACKBURN "BLUEBIRD" IV : Details of wing spar construction. A section of a main spar is shown in 1, while 2 shows how drag and interplane struts are attached. The section in 3 shows method of reinforcing spar for attachment of strut fittings. A spar end with flat plate fitting is shown in 4, while 5 illustrates the method of forming the wing tip, etc.

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[“FLIGHT” Photograph.]

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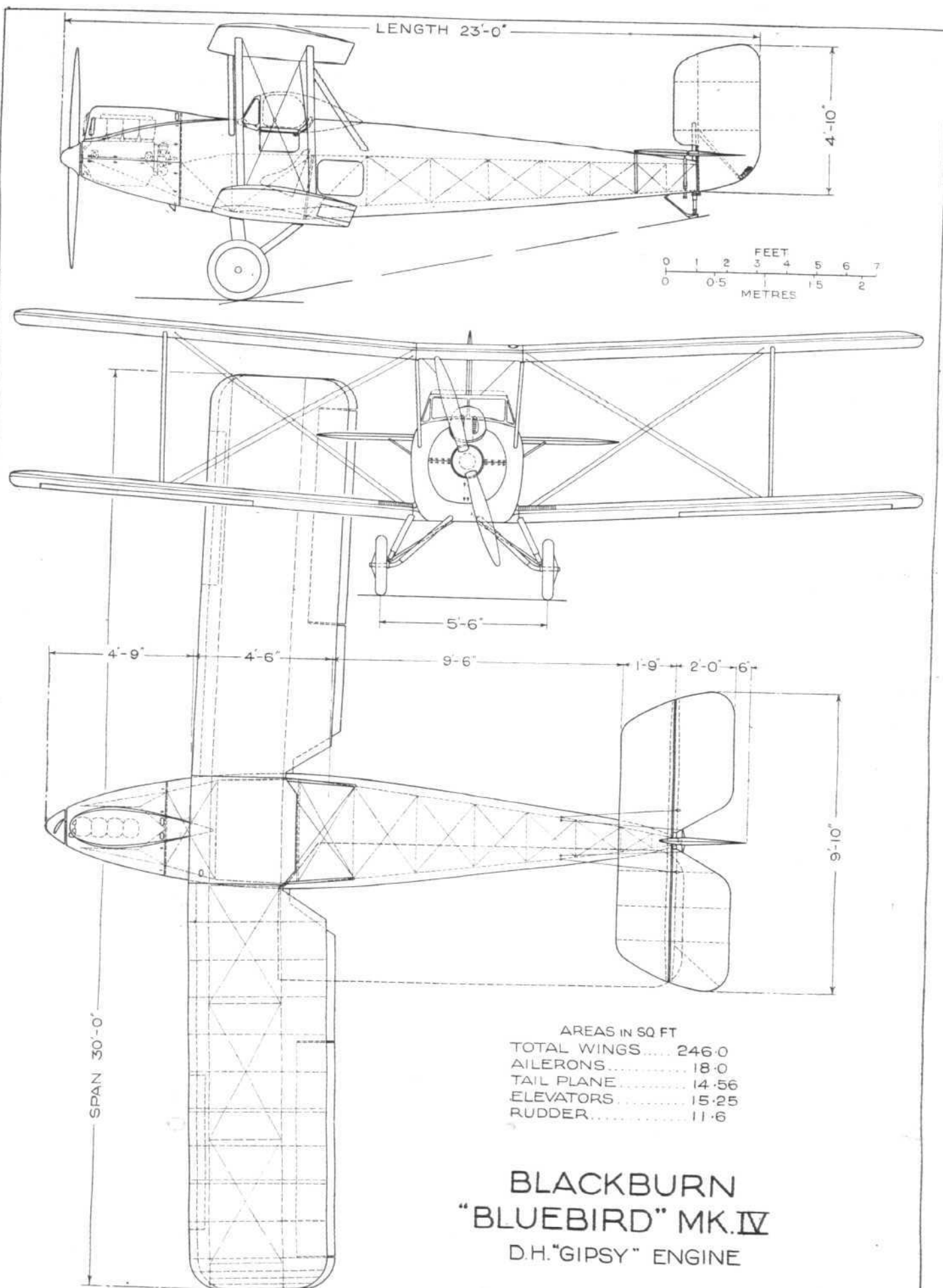
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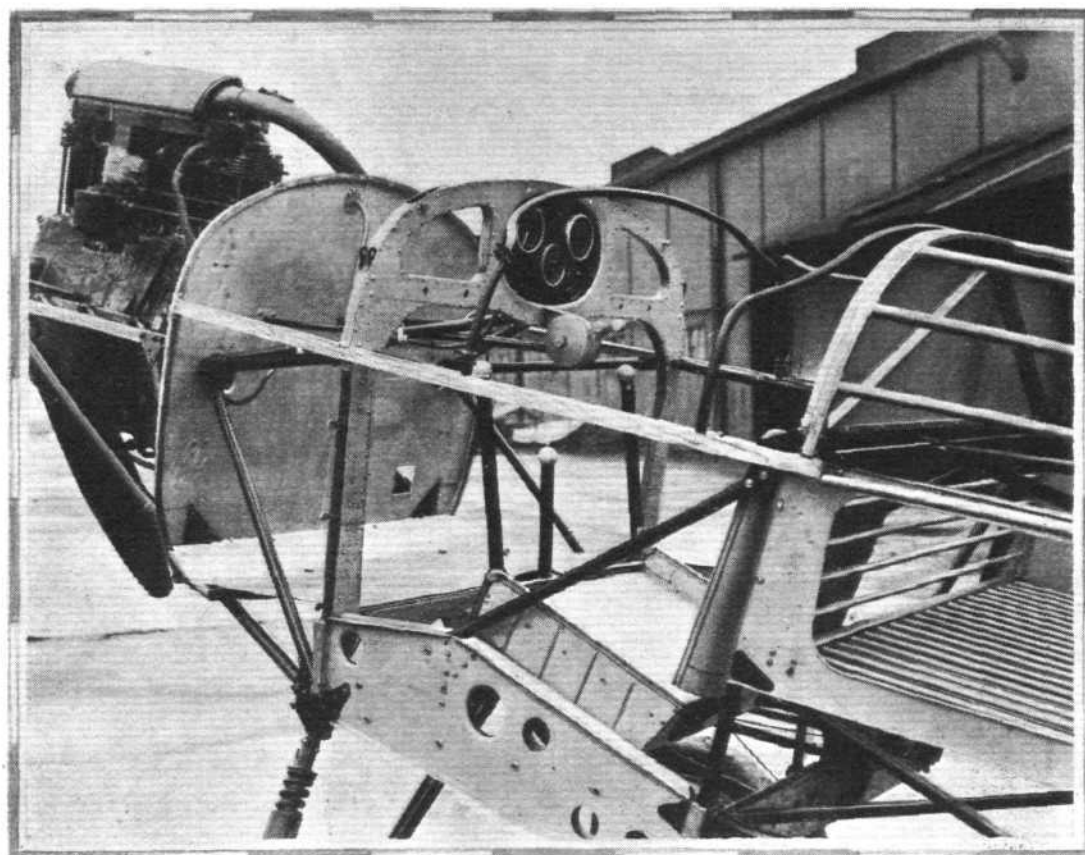


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THE BLACKBURN "BLUEBIRD," MARK IV : General Arrangement Drawings. The machine is shown fitted with a "Gipsy" engine, but can also be supplied with either "Cirrus III" or "Genet." When the latter engine is used, the main planes are slightly swept back.

The Blackbird "Bluebird," Mark IV: View of the Cockpit. Note side by side seating arrangement and dual controls. The small levers placed centrally under the instrument board are the engine controls, while the central lever between the "joy sticks" trims the tail plane.

"FLIGHT" Photograph

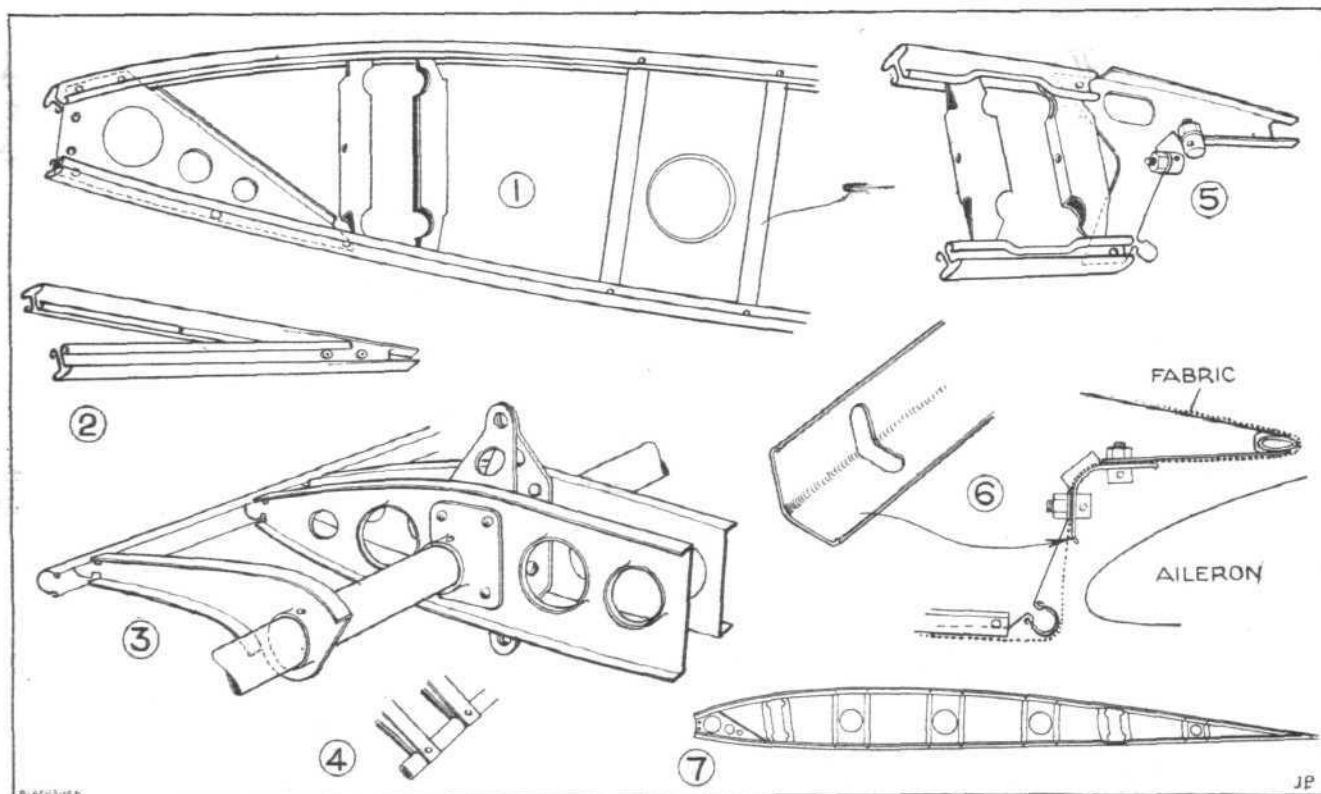


A fireproof bulkhead closes the forward end of the fuselage proper, and carries the engine bearers, which are of steel tubes very simply arranged and carrying a cowl, the removal of which gives access to every part of the engine. Some of our photographs which show the fuselage in skeleton illustrate this very clearly.

Wings.—If the fuselage structure is of simple construction, the wings are no less so. They are composed of steel spars carrying Duralumin ribs, and both spars and ribs are of ingenious simplicity. The wing spar consists of two identical

halves, joined by riveting along the neutral axis. The two halves of the spar are produced by rolling flat steel strip, an operation which, once the plant is available, cannot be described otherwise than as quite cheap; as there is but one row of rivets, the spar assembly is reduced to a minimum. Moreover, the type of spar lends itself admirably to the attachment of ribs and fittings, as some of our sketches illustrating wing details show.

The ribs, of Duralumin, have flanges made from strip and rolled to the section shown in some of the sketches. The



["FLIGHT" Sketches

THE BLACKBURN "BLUEBIRD IV": The main wing ribs are of Duralumin and take the form shown in 1 and 2. The Bristol-Frise ailerons are illustrated in 3 and 4. The manner of attaching the fabric over the rear spar to house the aileron is shown in 5 and 6, while 7 shows a complete rib.

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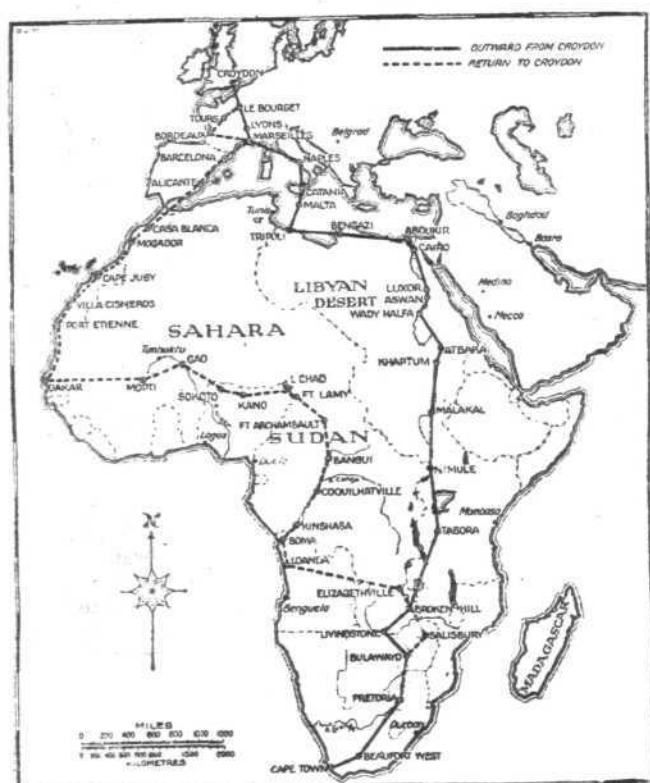
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Flight

Lady Bailey with her Moth at Stag Lane.



Sketch map of Lady Bailey's course, March, 1928 — January, 1929.

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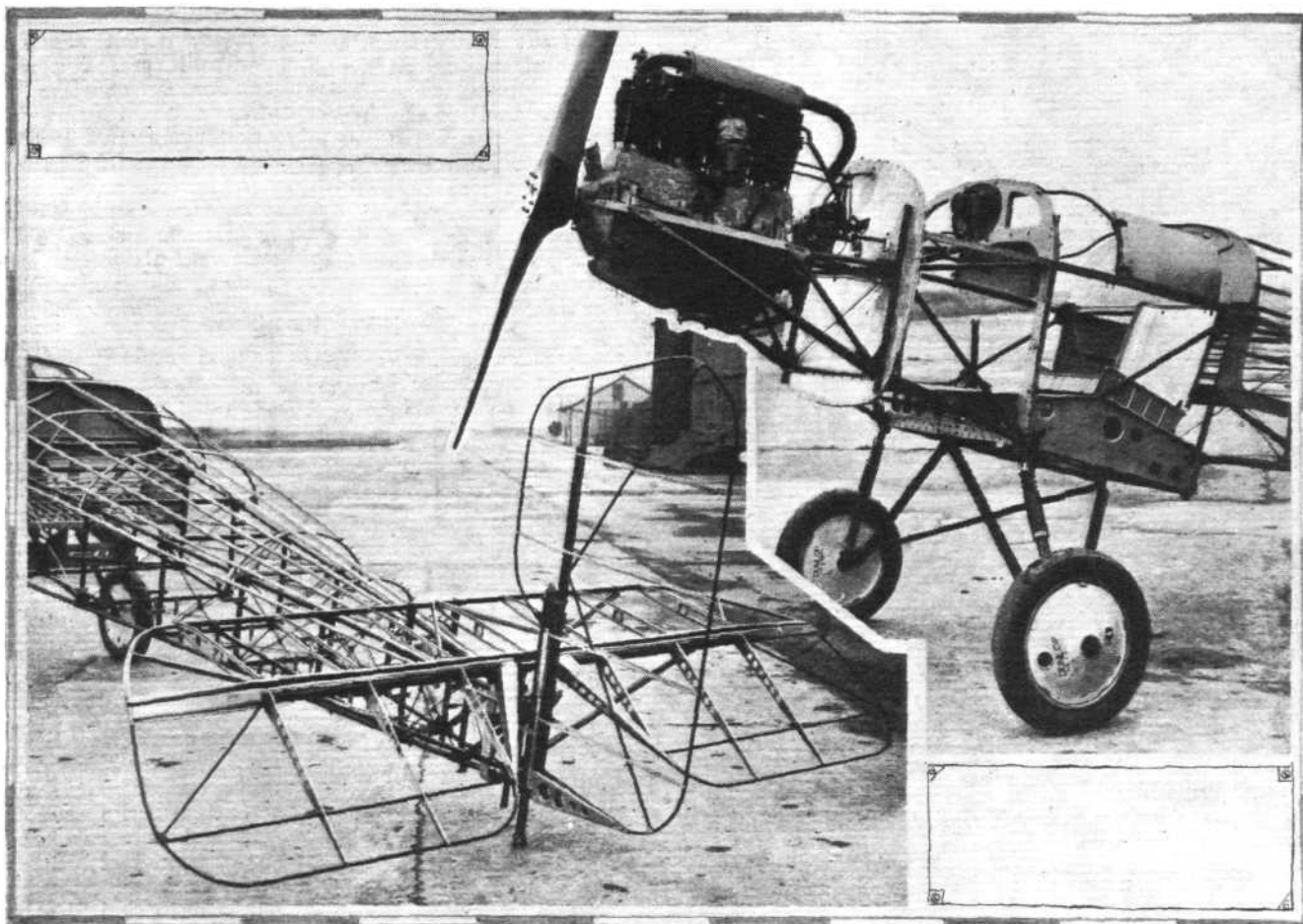


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["FLIGHT" Photographs

THE BLACKBURN METAL "BLUEBIRD" : Views of tail and nose. The engine is a de Havilland "Gipsy."

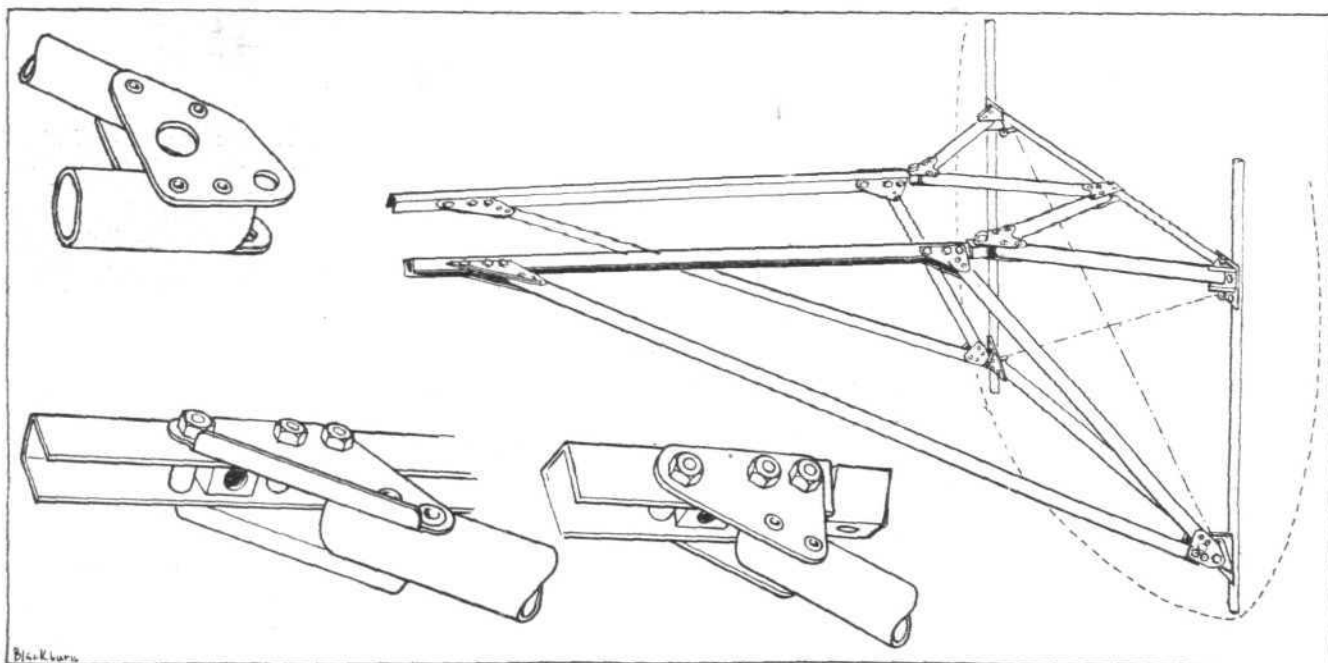
webs are merely small pieces of Duralumin sheet, placed at intervals, and having flanged lightening holes stamped in them.

Needless to say, the wings are designed to be folded, and an improved type of hinge arrangement has been adopted which avoids the necessity for using jury struts. Ailerons of the Bristol-Frise type are fitted to the lower plane only, and purchasers who so desire can have Handley Page automatic wing tip slots fitted to the top plane.

Tail.—The tail surfaces have spars, leading and trailing

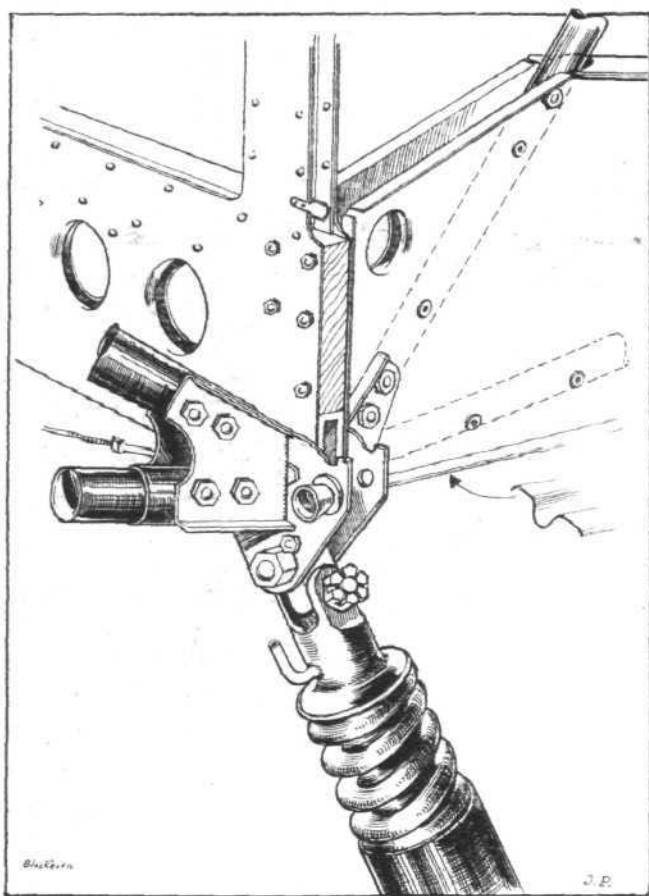
edges of steel tube, with light ribs of Duralumin. The tail plane is so mounted that it can be trimmed for incidence during flight, this being accomplished by a smaller lever in a notched quadrant in the cockpit, via a lay shaft, cranks and cables. There is no fixed fin, but the rudder is of large area and provided with a horn balance.

Undercarriage.—The undercarriage is of simple "split" V-type, of fairly wide track. No wire or cable bracing is used in it, the structure being stabilised by the diagonal arrangement of the steel tubes which compose the under-



["FLIGHT" Sketches

THE BLACKBURN "BLUEBIRD IV" : Details of the tubular engine mounting. The actual engine bearers are of channel section, and tilted to simplify attachment to the tubes. The "feet" on the engine are sloped to correspond.



Attachment of oleo leg to fuselage corner on Blackburn "Bluebird IV."

carriage. The rear struts form the radius rods, while the front legs are telescopic. The load is taken on spiral steel springs, while an oil dashpot prevents bouncing. In the plane of the front struts are the bent axles, which brace the structure laterally. The float undercarriage picks up the same fuselage fittings, and like the land undercarriage is devoid of both wires and transverse members.

The Cockpit

In spite of the side-by-side seating arrangement, the cockpit is by no means cramped. Two seats of special design are detachably mounted in such a manner that, when the machine is being flown solo, the second seat can be easily removed if desired. The seats are of aluminium and are shaped to take a parachute pack if one is carried. The controls are of normal

type, with one "joy stick" easily removable. A very small and neat instrument board is fitted centrally, as shown in one of our photographs, and just below it, within easy reach from both seats, are the engine control levers. The tail plane trimming lever is also centrally placed, between and slightly ahead of the two seats. For ordinary flying, a sloping wind screen is fitted, but this can be complemented if desired by a coupé attachment which turns the machine into an enclosed one.

Aft of the cockpit is a large luggage compartment, and above that, and extending a considerable distance aft inside the top deck fairing, is a space for long articles such as golf clubs, etc.

Petrol System

The centre-section of the top plane forms the petrol tank and the top spar passes through and forms part of the tank, which is easily removed when the wings are folded. Needless to say gravity feed is employed, so that the petrol system is the simplest possible.

Brief Specification

The main dimensions of the "Bluebird" Mark IV, are given on the general arrangement drawings on page 41. These drawings show the machine with de Havilland "Gipsy" or A.D.C. "Cirrus III" engine. When the Armstrong-Siddeley "Genet" is fitted, the wings are given a slight sweep-back. In the following table are given the main weight figures, etc. Actual performance figures are not yet available, but the calculated top speed is well over 100 m.p.h.

As a Land Machine

Engine.	Tare weight		Load carried		Loaded weight	
	lb.	kg.	lb.	kg.	lb.	kg.
"Gipsy"	884	401	536	243	1,420	644
"Cirrus III"	910	413	536	243	1,446	656
"Genet"	841	382	541	245	1,382	627

As a Seaplane

	lb.	kg.	lb.	kg.	lb.	kg.
"Gipsy"	974	442	536	243	1,510	685
"Cirrus III"	1,000	455	536	243	1,536	698
"Genet"	931	424	541	245	1,472	669

The load carried is composed as follows:—

	lb.	kg.
Pilot and passenger	320	145
Luggage	40	18.1
Petrol	144	65
Oil	20	9.1
Sundries	12	5.5
	536	242.7

In the case of the "Genet" engine, this load is increased by 5 lb., representing that amount of extra oil.

The maximum permissible flying weight is 1,550 lb. (703 kg.).

The Streamline Aeroplane

THAT large commercial aeroplanes would, were they ideally streamline, either fly at their present top speed for one-third of the present power or, alternatively, travel some 60 m.p.h. faster for the same power, was the conclusion arrived at in the paper read by Prof. B. Melvill Jones, A.F.C., M.A., before the Royal Aeronautical Society on January 10. In his paper, Prof. Jones set up an ideal to be aimed at, without attempting to point out how that ideal might be attained. In other words, he established an "upper limit" to what the present-day aeroplane could attain if it did not fritter away its power in generating turbulence; his ideal aircraft was that in which power was required merely to overcome induced drag, profile drag, and skin friction on the rest of the machine. As the paper was necessarily of a somewhat technical nature, it will be dealt with in more detail in the next issue of THE AIRCRAFT ENGINEER.

Mr. Gouge's New Post

WE are informed that Mr. Arthur Gouge, B.Sc. (Lond.), A.F.R.Ae.S., has been appointed general manager of Short Brothers, Ltd. As most of our readers are probably aware, Mr. Gouge has been chief designer at Shorts for several years.

R.Ae.S. Dinner and Discussion

ON January 24 an informal dinner and discussion will be held by the Royal Aeronautical Society at St. Ermin's Hotel, Caxton Street, Westminster. The subject will be

"The Compression Ignition Engine for Aircraft," and the case for will be made by Wing Commander G. B. Hynes, D.S.O., and the case for the petrol engine will be made by Capt. G. S. Wilkinson. Col. The Master of Sempill will be in the chair. Tickets are 6s. 6d. each and can be obtained from Capt. L. Pritchard, of the Royal Aeronautical Society. Members and non-members are invited (men only). Informal morning dress will be worn. The dinner will be at 7.30 p.m.

The Royal Air Force Memorial Fund

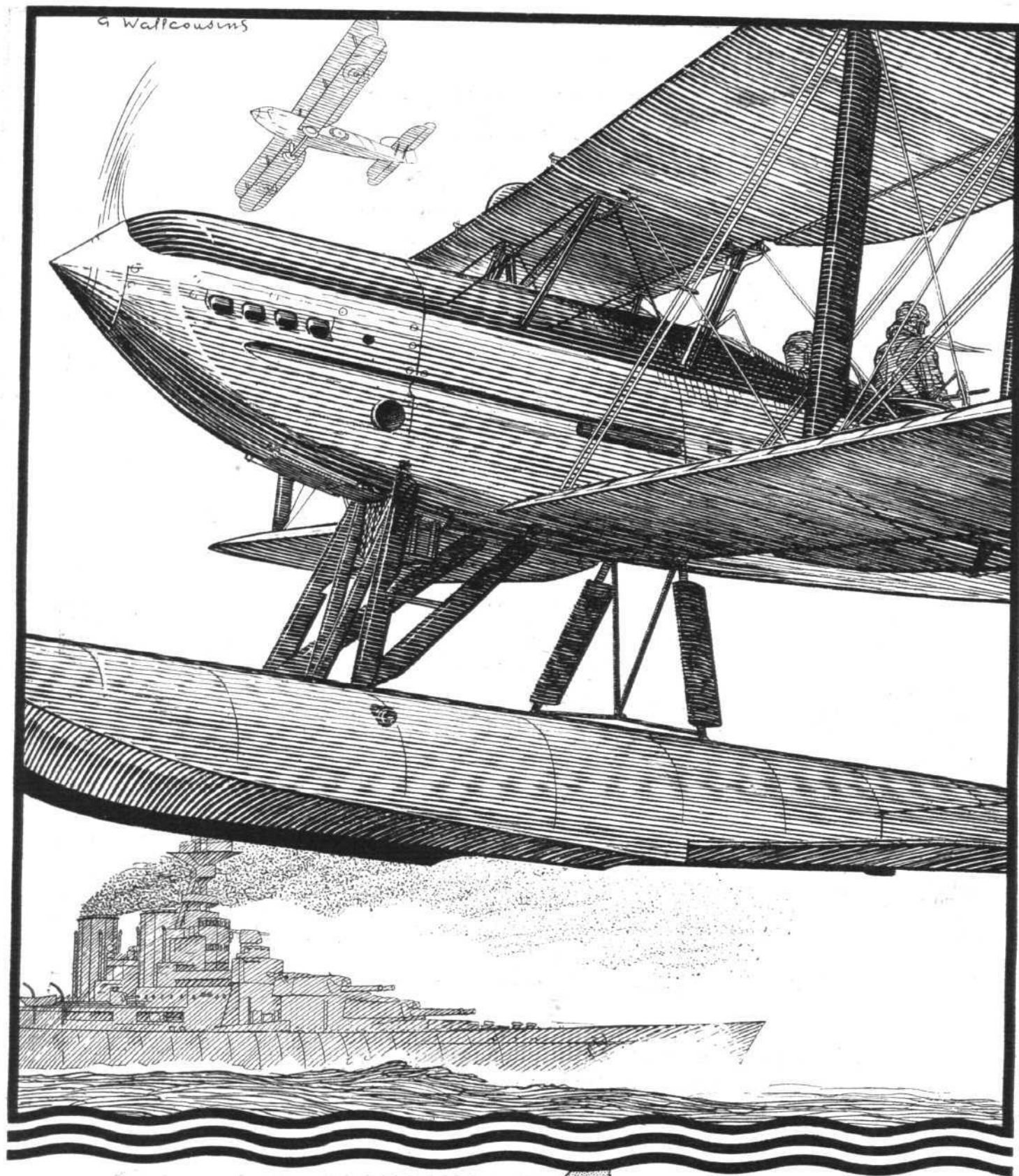
THE usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House on January 3. Lieut.-Comdr. H. E. Perrin was in the chair, and the other member of the Committee present was Mrs. L. M. K. Pratt-Barlow, O.B.E. The Committee considered in all 14 cases, and made grants to the amount of £388 8s. 8d.

25 Years of Flying

MR. HARRY HARPER has written a book which Hutchinson and Co. are to publish shortly entitled "25 Years of Flying." It will be a series of his personal impressions rather than a formal history and will be illustrated with many interesting photographs.

Change of Address

THE Glenn L. Martin Company of Cleveland, Ohio, has now changed its address to Baltimore, Maryland. A new plant, considered the largest of its kind on the Atlantic seaboard, will be in use in the spring of this year.



FAIREY

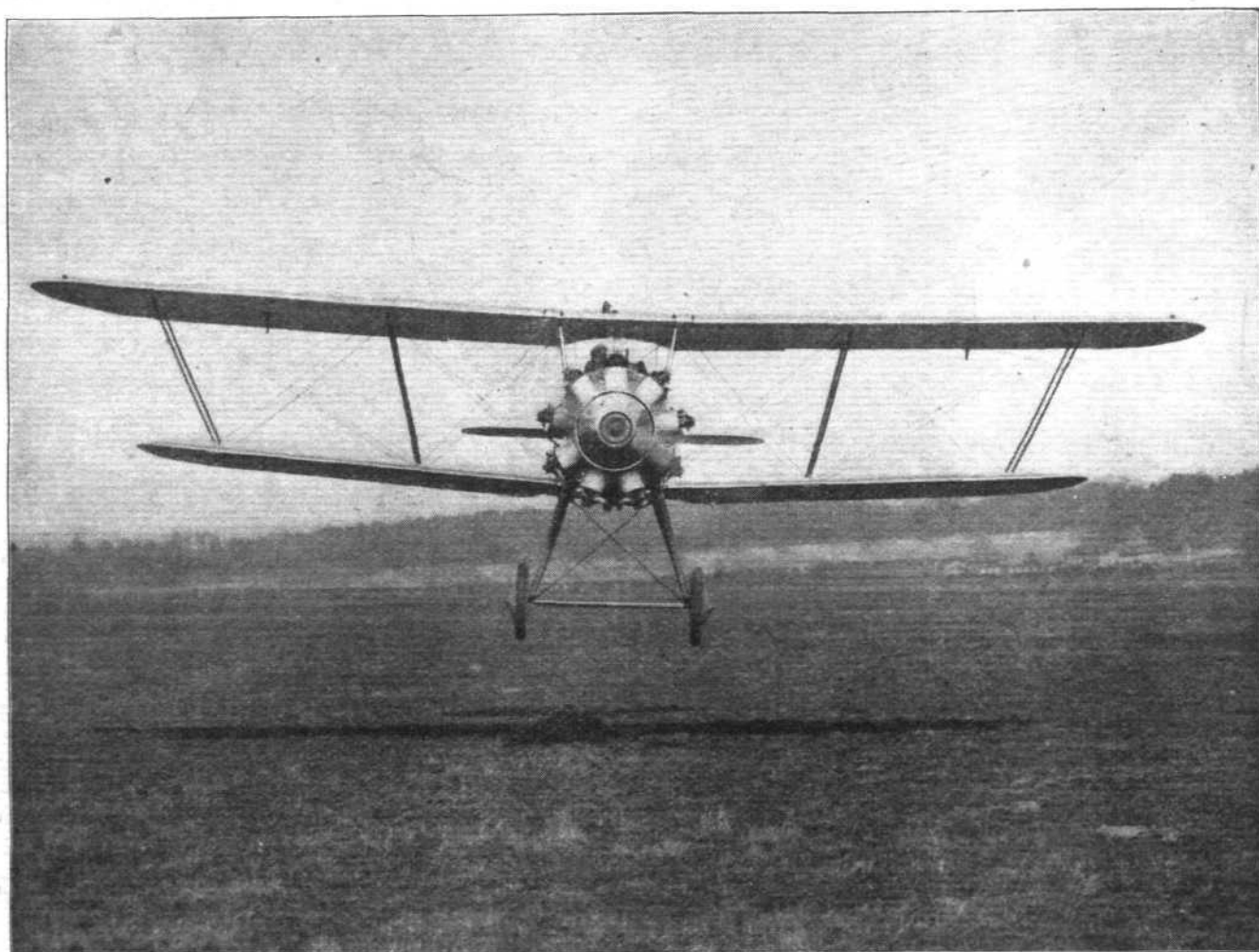
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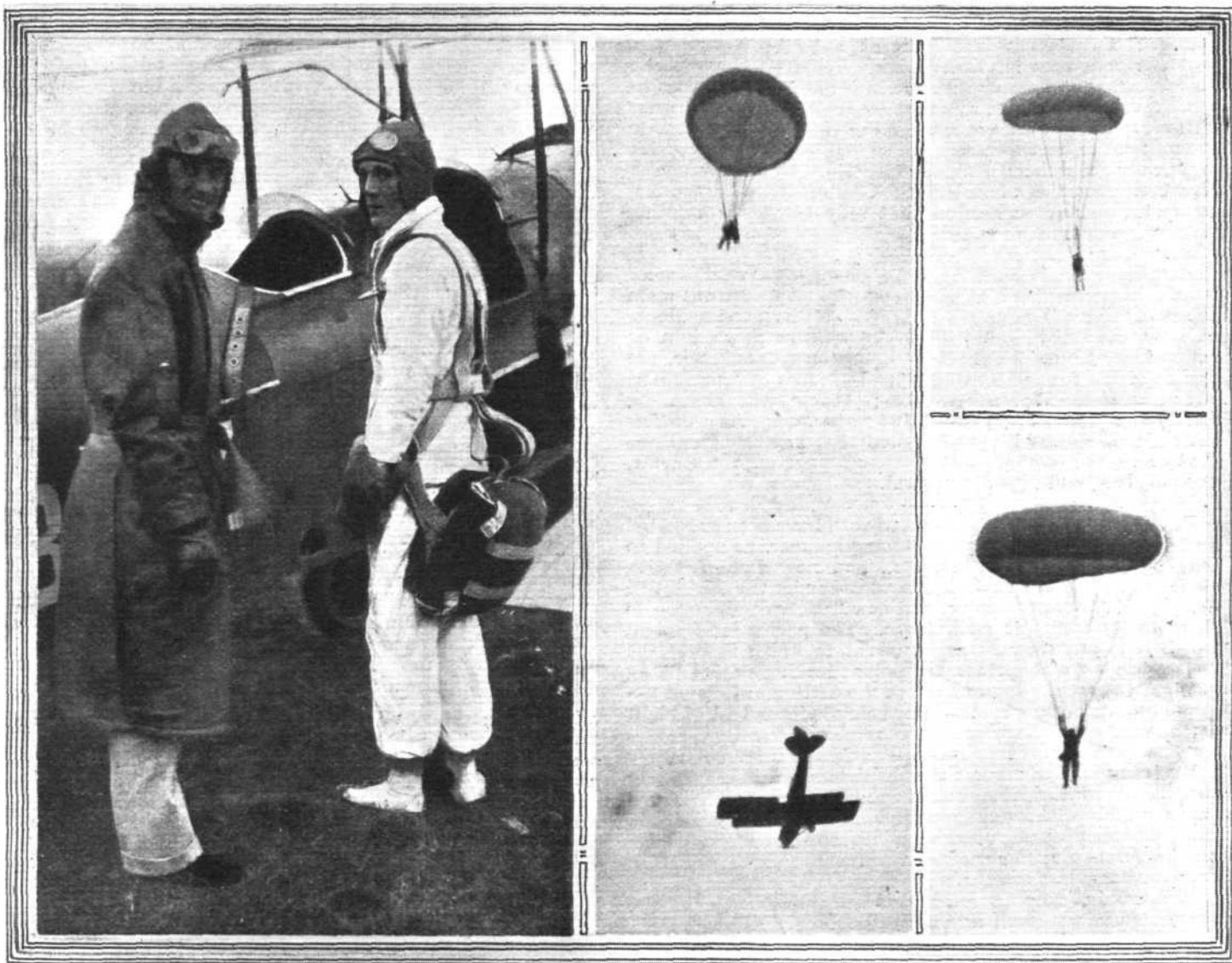
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RUSSELL "LOBE" PRODUCTION PARACHUTE

LAST year the British Russell Parachute Company introduced their "Lobe" parachute to this country and gave exhibitions at Stag Lane Aerodrome, Edgware, which were fully recorded in *FLIGHT* at the time. The parachute had already been in production in America and used on air lines. It is the invention of an American engineer, Mr. J. Russell. It was whilst watching demonstrations in San Diego that Capt. B. L. Jones became interested and decided to form the British Company and produce here.

Last year this came about. As we described before this parachute is individual in the design in its "lobe"-shaped canopy and independence of the pilot parachute. Rapid opening and a very slow rate of descent without any oscillation

Last Monday, January 14, he made three descents in quick succession with different types. The conditions were not ideal, a fairly stiff wind blew, causing considerable drift during descent. Despite this the demonstration was successful in showing the better performance of the 1929 type. The first drop was from 1,000 ft. with the 1928 type, which embodied the slight alterations. A D.H. "Moth" machine was used, flown by Capt. W. L. Hope, the taxi pilot. A quick opening of the canopy was noticed, but there was a certain amount of swinging in the breeze. Unofficial timing tests revealed the time taken for the descent as 47 secs. Going up again as soon as the 1929 type was fitted on him, Mr. Tranum again dropped from about 1,000 ft., and a difference



[*"FLIGHT"* Photographs

RUSSELL "LOBE" PARACHUTE TESTS: Mr. John Tranum (right) who demonstrated Russell "Lobe" parachutes at Stag Lane Aerodrome, Edgware, on January 14, from a D.H. "Moth" flown by Capt. W. L. Hope (left). In the other views Mr. Tranum is seen descending with (centre) the 1929 type, then the 1928 type (top) and finally a smaller 1927 type.

or swinging during descent is claimed as a result of the Russell design. Last year slight improvements were carried out, but the final modifications have since been embodied in this year's type which is considered as safe and efficient as possible besides having an even slower rate of descent.

Capt. B. L. Jones and Capt. H. C. Pearce state that they have obtained a 10 per cent. reduction on the rate of descent of the average parachute. The improvements have concerned the rigging and the diameter at the bottom of the lobe has increased. Safeguard has also been made against the parachute turning inside out. Production is now in hand and some parachutes have already been despatched abroad. The demonstrator, Mr. John Tranum, toured Europe last year and the parachute was well commented upon.

in performance was easily apparent. The opening was much quicker and there was no oscillation or swinging during the descent, which was timed at 58 secs.

Finally, a third and delayed drop was made. This was from 2,200 ft., and the demonstrator fell for quite 600 ft. before he pulled the ring and opened the canopy. This parachute was an American Russell type made in 1927, and is Mr. Tranum's personal property and the object of his personal liking. Most of his 500 descents have been made with it. It is smaller than the others but otherwise of the usual Russell lobe design.

The drift was considerable during this descent, although he pulled repeatedly on the shroudlines and spilled air out of the canopy on the side in which he wished to drop. At

the moment when he was obviously going to drift out of the aerodrome he pulled down with a big handful of lines and crumbled up almost half of the canopy, which checked the drift considerably, but he could not quite avoid alighting over the hedge although he easily steered clear of all obstruction and landed safely.

It was a particularly interesting demonstration of the control that can be obtained over a parachute in windy

weather. When the cords were pulled down momentary vertical descent was instantly obtained, as could be seen from the ground, and probably it was only the fact that Mr. Trantum did not wish to alight in the vicinity of the hedge that he shot well over for clearer space.

That third descent took 1 min. 11 secs. Mr. Trantum holds the official world's record for a delayed drop. He made it at San Diego, falling 4,500 ft. before opening the canopy.

EDDIES

A DATE to note and remember—May 23 to June 8 next, when the Royal Tournament for 1929 will be held at Olympia.

It is very comforting to know there is to be an 18-knot lifeboat ready to rush help in any aviation mishap in the Channel, but surely it is going far to suggest the number of recorded accidents would warrant such an installation. Maybe such a boat might be handy should a flying disaster be forward, but I fancy its main work is more likely to be other than with aircraft. As matters are at present the crews' duties are likely to prove a sinecure, which as time goes on should tend to be more and more so with air travel becoming practically general and 100 per cent. safe. Or has this speed-boat been put up as a bogey by the Channel tunnel supporters to neutralise any suggestion that may be made of future traffic competition in the air?

ALL the same, it looks as if the Channel "Ayes" should score against the "Noes," if an opinion can be formed upon the result of the "inquiry" of Sir William Bull to the House of Lords and the Commons as to willingness to join or support the Channel Tunnel Parliamentary Committee, the figures at the time of writing being:—House of Lords: for, 101; against, 54; neutral, 28; House of Commons: for, 175; against, 17; neutral, 104; absent, 4. As a further indication of feeling it may be noted that amongst the Press that counts, so far there are 57 papers supporting the scheme, none against, and nine are neutral.

POSSIBILITIES of the photo-electric cell have been suggested and demonstrated here in convincing manner, as applied to burglar alarms, gas-lighting, etc., and now from America comes the news that aviation is also—under the suggestive heading of Air-traffic control and new "Robot" devices—to share in its economic advantages. The particular form in which it is put forward as beneficial to flying is that the "electric eye" will enable an aeroplane seeking a safe landing at night to cast a beam of light to the earth and turn on the ground lights of an airport—thus being independent of night attendants, etc.

By being able to reverse the positions from the ground to the 'plane, this device should obviate the necessity, as explained by the bored groundman to the inquisitive old lady, of shooting the pilot when his engine stops in mid-air, to enable him to get down again.

WHERE is that Aviation-minded millionaire? The *Daily Mail* last week in illustrating the "£15,000 car" of Major Segrave, with which he will try to secure the world's terra firma speed record, made public the fact that this little venture was due to the *carte blanche* backing of a millionaire enthusiast—for the moment, at least, remaining anonymous. Hopes run high that Major Segrave will justify his backing, and so say all of us, for it is well that England should be, as of yore, top in all sports matters.

BUT—and a very large BUT at that—it is Imperially essential that the British Empire should also be foremost in the Air as well as on Earth and the Sea. To that end there is much to be done and a long way to go in the form of encouragement if we are to lead the world in this direction as of old in other elements.

HERE therefore is that offered opening for one of our great sportsmen millionaires to step into the breach and under proper guidance do unto the sport of aviation that which has been so many times done with far-reaching effects in the world of automobilism.

It is through Sport that practical advance will be attained, as it always has been, for industrial concerns, although already achieving marvellous results, must, necessarily, be restricted in their experimental efforts at "improving

the breed," simply by reason of limited resources and consideration for the trust which they administer for their shareholders. There must be many wealthy men in this country who might easily attain fame by entering the arena of Aviation Sport and by offering substantial backing in the form of generous prizes, etc., put forward the day when Britain can once more claim the premier position in the world as holders of all the records worth while. Already we are well on the way to attainment, but it requires now that fillip of "damn the expense" feeling by one or more millionaires to see British records zooming ahead and filling up the list.

JUST see how the tables have been turned by this very backing of sport for sport's sake. It was following the advent of the petrol engine for propulsion on the earth that man was able, only five and twenty years ago, to conquer the element of the air. And now what do we see? Aviation, by reason of the necessity of improving upon weight/h.p. performance, has so advanced upon the comparatively crude power contraption of motorism that it is the aero engine refinements which have carried the motor car to its present wonderful efficiency and in the case of Major Segrave (who is employing a Schneider Trophy type Napier engine), and Captain Malcolm Campbell (with a "Napier-Arrol-Aster" engine, the same type as used by Flight-Lieut. D'Arcy Greig in his great Calshot effort) enable them to make their attempts upon the world's "on earth" speed record. And should Major Segrave succeed in passing the at present American-held record, the main direct result will be the glory attaching to Man and "beast" with possible further trade following the flag, but in aviation we are but on the threshold of attainments, and it is there that shall arise some great man whose name shall go down to posterity as he who put Britain in the air where for centuries gone she has been on the sea.

As to methods—"it is so simple"—just communicate with the Secretary of the Royal Aero Club and the answer comes back "we do the rest," but we hope not in plain vans! So who will enter the breach and give the very earnest Committee of the Royal Aero Club a chance of showing what they can really do, when the sport purse strings are generously relaxed. Needless to say, should any of our millionaire readers not have the address of the Club at hand, Aeolus will see that communications through the Editor of this little journal shall not go astray!

LADY BAILEY, who has just completed her remarkable African solo flight, is not only a wonderful air-pilot, but has exceptional powers of observation in "passing along," as witness, by way of example, a word of corroboration from a press correspondent, Mr. J. Crow, as to the weakening of our position in Central Africa as set forth by Lady Bailey. Mr. Crow writes:—"I have just relinquished a commercial post in Elisabethville, Belgian Congo, and am in complete agreement with Lady Bailey when she says that we are being left out of the great development going on in (Central) Africa. With the completion of the railways connecting the interior with the West Coast, the Belgian Congo will be more fully opened up, and the potentialities are immense. America, with her usual acuteness, is already represented, Germany is awake, but there is still time for England to take her place. Delay is dangerous."

I NOTICE amongst the recent R.A.F. promotions that Wing Commander Francis Haskins, D.S.C., has now become Group Captain. As a Lieut.-Colonel and C.O. of Cattewater Air Station, Plymouth, during the war he made that station the best in the south-west group. A fine man to serve under. He won his D.S.C. for persistent air patrols over the lines in France, if I remember rightly.

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The Avro 504.N. fitted with Armstrong Siddeley Lynx engine and either wheels or floats.

The Avro-Avian, fitted with Cirrus or Armstrong Siddeley Genet engine.

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Note.—The Armstrong Siddeley Geared Centrifugal Supercharger was the first device of its kind supplied to the Services and has now been in use for three years.

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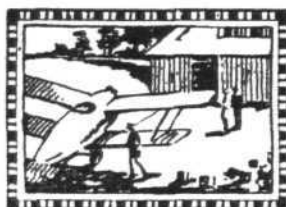
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constructors and pioneers of all-steel aircraft, employ over 1,000 workpeople at Whitley, near Coventry. Here were designed and built the Imperial Airways' Argosies, the steel Siskins, Atlas and A.W.A. 14's for the Royal Air Force, and here, too, is a school for training pilots under the R.A.F. Reserve Scheme.

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TESTING AMERICAN AIRCRAFT

By LADY HEATH

IF not all the world collected at the Chicago Aeronautical Exposition, certainly all the world's aircraft were at the Municipal Air Port to let prospective buyers try out the machines they had seen in the show. I visited the aerodrome one day and counted over 200 ships on the flying field, most of them pegged down to the frozen ground in the open. I do not know whether it was due to American gallantry or an implicit faith in British licensing, but I had the option of flying every machine on the field solo. I was faced with the necessity of making rapid choices. Time limited me so much that I was only able to fly three.

The first was the Sikorsky "Amphibian," which looks as its maker describes it, like a bundle of spare parts thrown together, but has a most interesting performance. In fact, I believe the most interesting performance of any aircraft in America today. It is extremely light to fly and can be side-slipped and swish-tailed like a light aeroplane. The dual control has really only one stick which pivots halfway down and can be turned to either of the side-by-side seats in the pilots' cockpit.

It has a very low rate of speed—about 43 m.p.h. Its climb is amazing. With one engine throttled entirely down it can still climb, and the adjustable fin and rudders take the load off the stick when flying with either of the two engines.

Shortly after I had the pleasure of flying this machine, it took off for Detroit with about 500-lb. overload. This seems to make no difference whatever to the take-off. It left the ground in about 100 yards. The only objection to this machine that I can see is that one has to rise in one's adjustable seat to see over the nose of the single pontoon.

The second machine I flew was the Fairchild 21. There were moments when I almost regretted this. This little aeroplane is only in the experimental stages and has the makings in it of one of the finest light aeroplanes in the world, but the wheel brakes were very stiff and she ran in concentric circles with me like the "Avro" 504 K before I got accustomed to it.

In the air I found her under-ruddered and with too little range of elevator. I understand that the firm is fitting larger empennage control surfaces. The top speed is very fast and quite up to the specifications, although the landing

speed is a bit higher. I felt that I was making a piteous exhibition in trying to get to the starting point where a traffic man had control of operations, sending off, all day, machines at 15 min. intervals. Great things may be expected from this light aeroplane in the near future.

The third machine I tried was, to my mind, the pleasantest. The "Husky Junior," made by the Consolidated Air Craft Co. of Buffalo. Although outside the light aeroplane class and with a 110-h.p. engine, this aeroplane lands under 40 m.p.h. It had no air speed indicator, but I reckon she did not drop until about 32 m.p.h. The overall factor of safety is 10. But for most parts it is 11.5. The factor of safety for the fuselage and cockpits is 22. I felt it was a privilege to fly this machine and hated bringing her down. The controls are beautifully balanced and she stunts as if she wanted to.

One was even tempted, owing to the harness, to try her upside down a little way, a performance she takes very well owing to the wing section. I can honestly say that I have never flown an aeroplane that I liked so well at first sight; although I was flying with no instruments whatsoever. The designer has taken many of his ideas from the old Avro, and has studied extensively the leading European makes. The model I flew, has a second windscreen between the cockpit, not as shown in the specifications. One had a curious feeling in this aeroplane that it would be utterly impossible under any circumstances to break it. It is not fitted with wheel brakes, but I reckon it pulled up with engine still on within forty yards of where she first touched ground.

Among the other aeroplanes which I have tried at other times were:—

Standard "Bellanca," which has a long float, but a very sensitive landing.

Stinson "Detroiter." The model I flew had the cockpit wired in and one felt like a bird in a cage, none too good.

The "Travel Air." Rather underpowered with the old Ox 5 engine, but a very nice machine, though somewhat too sensitive to rudder control.

Stout All-metal Triplane. This was equipped with the standard engines and felt rather underpowered. The newer models have got the higher-powered "Wright" engines and give, I understand, a very pleasing variation of speed.

FROM LONDON TO THE GOLD COAST

THE following account of Captain R. S. Rattray's flight to the Gold Coast has been received from Mr. Graham MacKinnon—

It was a cold and foggy day, December 5, when many friends and relations of Captain R. S. Rattray, a Provincial Commissioner on the Gold Coast, gathered at Croydon Aerodrome to see him off on his 5,000 miles' lone flight in G-EBZZ to the Gold Coast. After many consultations with the weather experts, in spite of adverse conditions Captain Rattray decided to get as far as Lympne that day. In the hangar men were busy lashing various spares to the little machine which seemed so frail for the long journey in front of it. But it was a De Havilland "Moth" with a Cirrus engine, whose record for reliability inspired confidence in Captain Rattray's enterprise. The machine was pushed out on to the tarmac whilst the round of farewells was made which marked the beginning of a flight which has been Captain Rattray's dream for years. "Ashanti" took off like a helicopter and circled the Aerodrome and made off through a low cloud.

From that time onwards brief telegrams gave us glimpses of his journey. We have since learned that the landing at Lympne was undertaken in very unfavourable conditions, visibility being only a few yards owing to thick mist. After leaving Lympne on December 6, Poix de la Somme was reached when more fog was experienced, making a delay of a

day. December 7 saw Captain Rattray's arrival at Le Bourget, Paris, when he was regrettably delayed for eight days owing to fog and snow. In spite of unfavourable conditions, he left later for Avignon, finding his way over the outskirts of Paris after which he was able to follow the Paris-Lyons railway line, only to be delayed again by a gale of 90 km. an hour.

At Lyons a hasty note described his experiences. "I did Paris to Lyons in one hop, had a snack and was going on to Perpignan when, about 3 p.m., I realised I was running into something as ZZ was doing about 140 miles an hour and some very bad bumps. On seeing this I decided to turn back and land. When I turned into the wind (I had to guess it as the flag here was blown away), I could hardly make any headway against it and guessed I was in for trouble. It was my metal prop that saved the machine from turning completely over as I bounced 20 ft. in the air and it supported the machine where a wooden prop would have broken off. Not a thing damaged. From my lessons at A.D.C I was enabled to change it myself."

He arrived at Avignon safely on the 17th and there was a further delay caused by fog until the 21st, when he left to fly over the very rocky country and round the steep cliffed coast where there is no landing ground for miles, en route for Barcelona.

Barcelona was reached by December 21 and Captain Rattray must have been relieved to have left behind the most

difficult stages of his journey. Much of the country, owing to its rocky and mountainous nature does not lend itself to natural landing grounds in the event of engine failure. It was for this reason that Captain Rattray thought it advisable to fly out over the sea between Perpignan and Barcelona as it would be better to make a forced landing in the sea than on a mountain ridge. By December 26 he reached Mogador where he met Lady Bailey, who was flying back from the Cape, and we can imagine them exchanging information on the different routes each had to follow, and bidding one another "Bon Voyage" as they went on their ways, the one going north to Casablanca and the other south to Agadir.

Upon arrival at Agadir on December 27, Captain Rattray had difficulty in obtaining permission from the authorities to fly over the Riff country, where, in the event of a forced landing, he might have met with an unpleasant welcome from the hostile natives. Having insured at Lloyd's he immediately availed himself of the services of Lloyd's Agent, who sent the following cable to London, dated December 27, 3.15 p.m.—"Rattray refused permission to fly over the French

zone between Agadir and Rio de Oro pending authority from British Government. Please communicate Air Ministry and request necessary authority be cabled direct Colonel Commandant Territoir, Agadir. Rattray accepts full personal responsibility own safety." On receipt of that message, Lloyd's communicated with the Air Ministry and authorisation was obtained from them for Captain Rattray to proceed. Accordingly the following morning, December 29, at 7.30 a.m. he left for Cape Juby, where he arrived at 10.45 a.m.

Subsequent movements were recorded by the following cables received at Lloyd's:—

Arrived Villa Cisneros, December 29 (5.15 p.m.).

Arrived Rio de Oro, December 30.

Due Dakar. Staying one day, December 31.

Leaving Dakar for Kayes, January 2, 1929.

From Dakar, Captain Rattray's course was north to Kayes, where he arrived on January 4, and it is hoped that by the time this record of his journey appears in print, he will have successfully completed his flight to Accra on the Gold Coast. (Captain Rattray landed at Accra on January 15.—ED.)

LIGHT PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.
Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Major G. S. Cooper, Filton Aerodrome, Patchway.
Cinque Ports Flying Club, Lympne, Hythe. Hon. Secretary, R. Dallas Brett, 114, High Street, Hythe, Kent.
Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.
Lancashire Aero Club, Woodford, Lancs. Secretary, F.W. Atherton, Woodford Aerodrome, Cheshire.
Liverpool and District Aero Club, Hooton, Cheshire. Hon. Secretary, Capt. Ellis, Hooton Aerodrome.
Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Major Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, J. T. Dodds, Cramlington Aerodrome, Northumberland.
Norfolk and Norwich Aero Club, Mousehold, Norwich. Secretary, G. McEwen, The Aerodrome, Mousehold, Norwich.
Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria St., Nottingham.
The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.
Southern Aero Club, Shoreham, Sussex. Secretary, C. A. Boucher, Shoreham Aerodrome, Sussex.
Suffolk Aeroplane Club, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.
Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

Instructors: Captain V. H. Baker, M.C., A.F.C., Capt. F. R. Matthews, Ground engineer: C. Humphreys.

REPORT for week ending January 13—

The following machines were in commission during the week:—G-EBXS; G-EBZC; G-AABL; G-EBMF.

Total flying time for the week: 23 hrs. 10 mins.

Dual instruction: 21 members received dual instruction during the week, the time being 14 hrs. 35 mins.

Solo flying: 16 members flew solo during the week, the time being 8 hrs. 35 mins.

During the week-end the Club took delivery of a D.H. "Moth" Cirrus Mark 11 G-EBZC, purchased from Lady Heath.

J. M. Gittins, one of the members, has now completed all the tests for his "B" licence.

Christmas raffle: Members are reminded that the draw for the Christmas raffle will take place at the Clubhouse, Stag Lane, on Sunday next the 20th instant.

Clubhouse: The facilities of the new clubhouse are greatly appreciated by the members, and there was a fairly large gathering on Sunday. Hot and cold luncheons are served daily.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending January 12.—Pilot instructors, F./Lt. F. A. Swoffer and Mr. W. H. Dudley. Ground engineers, Mr. E. Lenny and Mr. J. Elliott. Aircraft: D.H. 60 "Moths" G-EBOI and G-EBOH. Flying time for the week 10 hrs. 45 mins. Pupils under instruction (5) 3 hrs. Soloists (1) 5 mins. "A" pilots: (5) 6 hrs. 50 mins. Passengers: (2) 20 mins. Tests: (7) 50 mins.

Mr. Starkey made a successful first solo. Mr. Fry flew OH to Filton on Tuesday, but while having lunch the neighbourhood became enveloped in fog and he had to return by train. He flew back to Filton with Colonel Strange in a "Spartan" on Friday, and in due course returned with OH. We greatly appreciate the courtesy shown by the Bristol and Wessex Club.

Mr. Hayter had a somewhat similar experience, on Thursday he took OH to Tangmere and again owing to fog was unable to leave so he stayed the night and flew back to Hamble early on Friday morning.

Mr. K. B. Hicks and Mr. C. C. Penfold joined the club this week.

LANCASHIRE AERO CLUB

REPORT for week ending January 12.—Flying time, 9 hrs., 35 mins. Instruction: (7), 2 hrs. 50 mins. Solo flights (12), 5 hrs. 10 mins. Passenger flights (2), 35 mins. Tests, (8), 1 hr. 10 mins.

Instruction (with Mr. Hall): Davies, R. G., Garner, Stern, Whitehouse, Foote, Williams, Hardy. Machines in commission, XD; MQ; PH; QL.

Pilots: Gort, Hall, R. F., Weale, Nelson, D., Goodfellow, Mills, Lacayo, Meads, Williams, Nicholson, Twemlow, Hardy.

Passengers: (with Mr. Cantrill): Rawcliffe; (with Mr. Lacayo), Gort.

Persistent fog has seriously interfered with flying during the week.

Mr. R. R. Williams went solo again after six months' absence from flying and performed very creditably. He also added considerably to the enjoyment of members at the week-end by bringing with him his dirt-track motor cycle on which various hardy (or fool-hardy) members essayed a little broad-siding across the aerodrome.

LIVERPOOL & DISTRICT AERO CLUB

REPORT for week ending January 12.—Machines in commission. Avro Avians WK, XX, XY. Instructors: Flt.-Lieut. J. B. Allen and E. A. Sullock (Hon.). Ground Engineer: Mr. H. Pixton.

Total flying time: 11 hrs. 15 mins. Eight pupils totalled 5 hrs. 5 mins. dual Four soloists totalled 2 hrs. 55 mins. Five "A" pilots totalled 2 hrs. 20 mins. Two passenger flights totalled 25 mins. Test flights, 30 mins.

Mr. Parker made a very successful first solo last week. His performance was so good that the writer did not realise it was the first solo, hence the omission in last week's notes. Now you are appeased, Sir?

Mr. Greenhalgh made an attempt at his height test on Saturday. After climbing to 7,000 ft. he glided through the clouds, but did not know where he was until he had made a perfect three point landing (two wings and a "prop") near Buckley (which the Machine, XY certainly is—now). The barograph, faithful to the last, recorded the landing as a large oversize blot.

MIDLAND AERO CLUB

REPORT for week ending January 12.—Total flying time, 8 hrs. 10 mins. Dual, 1 hr. 35 mins. Solo, 5 hrs. 15 mins. Passenger, 30 mins. Test, 50 mins.

The following members were given dual instruction by Flight-Lieut. T. Rose, D.F.C., and Mr. W. H. Sutcliffe: W. Handley, Mrs. Leigh-Fermor, C. Blakeway, L. V. Mann.

"A" Pilots: W. M. Morris, M. A. Murtagh, H. J. Willis, R. L. Jackson, R. L. Brinton, G. C. Jones, W. Swann.

Soloists: W. L. Handley, J. K. Morton, C. Blakeway.

Passengers: E. Hanson, L. V. Mann.

Flying time, 1928: The total number of hours flown was 1,216 hrs. 2 mins. The flying time for 1927 was 551 hrs. 12 mins.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending January 12.—Instructor, Capt. J. C. Houston, M.C. Engineer, A. Kirkby. Machines, QX, ZW. Flying time for week, 18 hrs. 10 mins. Dual, 9 hrs. 40 mins. Solo training, 1 hr. 20 mins.

"A" licences, 6 hrs. 45 mins. Tests, 25 mins.

Congratulations to Mr. Collier for having successfully navigated his course through the oral examination and when he can derive sufficient courage to visit the camera man his licence will be a matter of course.

Capt. Houston is giving courses of advanced training to our old pilots, and they are beginning to think that they were either very brave or blessedly ignorant.

Next Saturday, at 7.15 p.m., we are staging an informal dinner at the club, and this will be followed by a short talk by Capt. Houston on "Elementary Meteorology."

We understand that two of our members have bought Moths of their own. The rest of us are looking for the result of the raffle.

We are grateful to Mr. Adcock this week for his kind presentation of framed and autographed photograph of C. B. Hucks flying one of his early machines. This is particularly interesting to us as Mr. Hucks was the first man to fly an aeroplane at Norwich.

SOUTHERN AERO CLUB

REPORT for week ending January 13.—There has been little activity during the week, although several members have turned up in the cold weather to "do a spot."

Mr. Leech landed at the aerodrome on his Avro "Baby," G-EAUM ("Cirrus, Mark I"), which was reconditioned and assembled here, on his return from Newcastle. His time was only 3 hrs. 50 mins. By the way, on arrival his tailplane was found to be bitten through, and covered in large teeth marks. It was at first thought that one of our young "he-men" (vide Suffolk) was responsible, but the damage was eventually traced to a horse.

We have adopted the system of entirely closing down the club on Mondays, to give the staff a full day's holiday, as they are busy all Sunday.

Mr. Bellairs now uses his new Avian, G-AADE, as a means of conveyance between the aerodrome and his home in Burwash.

Last week we had the pleasure of a visit from Mr. H. R. Law on his Moth from Stag Lane.



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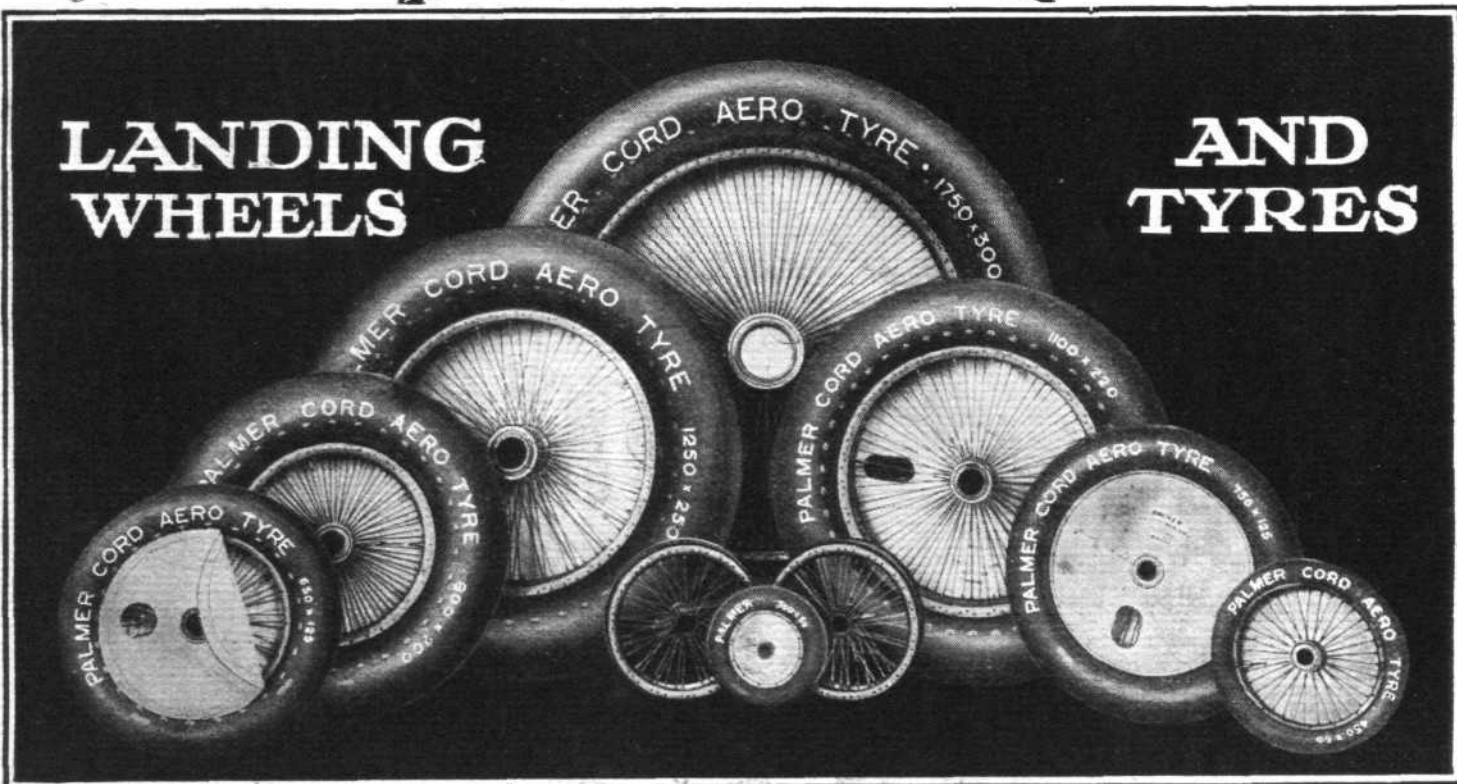


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Tyre Size	Wheel No.	Hub		Track Line	Tyre Size	Wheel No.	Hub		Track Line	Tyre Size	Wheel No.	Hub		Track Line
		Length	Bore				Length	Bore				Length	Bore	
375 x 55	168	111'12"	25'4"	m/m Central	700 x 100	176	178'	44'45"	m/m Central	1000 x 180	148	220'	80"	m/m Central
"	195	130'	38'09"	Central	"	179	178'	55'	132/46	"	149	185'	55'	Central
500 x 60	16	111'12"	25'4"	Central	650 x 125	119	178'	55'	132/46	"	155	220'	66'67"	Central
450 x 60	30	89'	31'75"	Central	"	147	178'	55'	Central	"	166	185'	55'	125/60
"	172	130'	38'09"	Central	"	188	120'	34'92"	Central	900 x 200	107	185'	55'	Central
575 x 60	21	160'	28'	Central	"	336	178'	44'45"	132/46	"	108	185'	55'	125'60
"	180	150'	38'09"	104/46	750 x 125	77	178'	44'45"	132/46	"	128	220'	66'67"	Central
"	186	120'	34'92"	Central	"	92	185'	55'	135/50	"	137	250'	80"	Central
"	190	150'	38'09"	Central	"	95	185'	55'	Central	"	157	185'	80"	Central
600 x 75	21	160'	28'	Central	"	99	178'	38'89"	132/46	1100 x 220	134	220'	66'67"	Central
"	180	150'	38'09"	104/46	"	112	150'	38'09"	Central	"	136	250'	80"	Central
"	186	120'	34'92"	Central	"	176	178'	44'45"	Central	975 x 225	192	185'	60'32"	Central
"	190	150'	38'09"	Central	"	179	178'	55'	132/46	"	194	185'	55'	125/60
700 x 75	78	178'	44'45"	132/46	800 x 150	161*	185'	55'	135/50	1250 x 250	314	250'	80"	Central
"	79	178'	44'45"	Central	"	162*	185'	55'	Central	"	154	304'8"	101'6"	Central
"	100	178'	38'09"	132/46	"	163*	185'	66'67"	135/50	"				
"	101	178'	31'75"	132/46	"	169†	185'	55'	135/50	1500 x 300	305	304'8"	152'4"	Central
"	196	178'	55'	Central	"	177	185'	55'	135/50	"	306	304'8"	101'6"	Central
600 x 100	188	120'	34'92"	Central	"	183	185'	55'	Central	1525 x 325	197	304'8"	101'6"	Central
"	304	150'	38'09"	104/46	"	211*	185'	60'32"	135/50	1750 x 300	139	400'	152'4"	Central
"	333	120'	34'92"	Central	1000 x 150	167	185'	55'	125/60	"	191	350'	150'3"	Central
700 x 100	77	178'	44'45"	132/46	"	174	250'	80"	Central	1750 x 350	193	400'	125'	Central
"	92	185'	55'	135/50	"	182	185'	55'	Central					
"	95	185'	55'	Central	"	187	220'	66'67"	Central					
"	99	178'	38'89"	132/46	"	201	185'	60'32"	125/60					
"	112	150'	38'09"	Central	"	210	185'	60'32"	Central					

*Wheels Nos. 161, 162, 163, and 211 are of stronger type than the other wheels for 800 x 150 tyres.
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†Wheel No. 169 is fitted with Ball Bearings (L/NB)

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SUFFOLK & EASTERN COUNTIES AEROPLANE CLUB

Report for week ending January 12.—Instructor: G. E. Lowdell, A.F.M. Ground engineers: "A and C," Mr. Shearman; "A," G. Keeley. Aircraft: three Blackburn "Bluebirds," RE, SZ, and UH. Aerodromes: Hadleigh, Suffolk; Conington, Cambs.; Seaplane base, Brightlingsea, Essex. Flying time, 19 hrs. 5 mins. Four members were given dual instruction (2 hrs. 20 mins.). Flights were made by eight "A" licence members (15 hrs. 15 mins.); six passengers were carried (50 mins.); eight tests were made (40 mins.). Mr. Schofield and Mr. Ogilvie made cross-country flights to Norwich. Two new members, Messrs. W. C. and H. L. Berry, started instruction during the week. We have been handicapped during the week by considerable fog and by the absence of our fitter, Mr. E. Mayhew, who is still on the sick list, but, thanks to Mr. Shearman, of the Blackburn Aeroplane Co., Ltd., we have been able to carry on.

A pleasant surprise awaited members who visited Hadleigh during the week. They found a strange growth coming out of the aerodrome adjacent to the sheds, which on closer examination proved to be the much-discussed and badly needed club-house. This should be ready for occupation in the course of the next week, when luncheons, teas, etc., will be available for members and visiting pilots. On the other side of the sheds a deep cavity is appearing. This will hold the tanks of three petrol pumps, between which will be placed pumps from which will flow the brands of lubricating oil most favoured by light aeroplane engines. All this work should be completed by the end of this month, and early in February it is hoped to hold an official opening of the club-house and aeroplane service station. Pilots, please note that this service station to refuel man and machine will be open every day of the week from February 1.

YORKSHIRE AEROPLANE CLUB

The club was reopened for flying on Saturday, January 12, after it had been closed for the holidays.

Capt. H. V. Worral, D.S.C., has been appointed as pilot instructor to the club to fill the vacancy caused through the resignation of Capt. G. R. Beck.

Warrington Aerodrome

A SITE for a municipal aerodrome is to be sought at Warrington in Lancashire. There must now be about a score of towns which are definitely pledging themselves to make aerodromes.

Sheffield Flying Club

It is reported again that a flying club will be started in Sheffield in view of the city acquiring a municipal aerodrome. It is considered locally that aviation will make new demands for Sheffield steel. As mentioned before, the proposed site at the moment is Coal Aston, on the borders of the town, where an aerodrome was situated during the war.

French Private Owner Killed

M. P. J. FISBACH, aged 18 years, a French private owner of an *Albert* monoplane, was killed on January 12 at St. Raphael whilst testing his machine before resuming an interrupted flight towards India. He competed in last year's light plane trials at Orly, France, with an *Albert* monoplane.

Empire Model Aeronautics

THE Society of Model Aeronautical Engineers are anxious to establish an Empire Model Aircraft Movement. The Model Aircraft League of Canada is already affiliated to the S.M.A.E., and according to the progress they are

FROM THE FLYING SCHOOLS

Brooklands School of Flying, Brooklands Aerodrome

Report for week ending January 13.—Chief instructor: Capt. E. A. Jones. Ground engineers: W. H. Hellon, W. A. Watts. Machines in commission: Renault Avros G-EBVE, WJ. Pupils, 9; joy-rides, 10. Flying time, 5 hrs. 5 mins.

Flying weather has been a little more favourable this week, and quite a number of pupils came down during the week-end.

Sir Philip Richardson, M.P., went for a joy-ride on Sunday and brought his fifty-fifth joy-rider along with him.

Henderson Flying School, Croydon Aerodrome

Report for week ending January 12.—The Henderson Flying School, Ltd., is now operating at Croydon Aerodrome.

Lieut.-Col. G. L. P. Henderson has been asked by Lord Edward Grosvenor personally to train three Auxiliary Air Force Reserve officers—namely, Mr. Anthony Jenkinson, Mr. Millbank, and Mr. Nigel Seely.

In spite of very bad weather, Col. Henderson has put in a very good deal of flying with these gentlemen and other pupils. He has also inaugurated an entirely new system of training, by which about six hours' flying is done on a Mono Avro and the pupil is then transferred to a Moth and sent solo on this type. It is considered that this method of training will turn out very much better pupils than straightforward training on a Moth and presents no difficulty.

OVERSEAS CLUBS

SINGAPORE FLYING CLUB

Report for week ending December 1, 1928.—Total flying time, 16 hrs. 10 mins. Solo, nil; dual instructions, 7 hrs.; air experience, 8 hrs. 20 mins.; joy-rides, 50 mins.

Only one machine has been available this week, but G-EBUK is now practically ready. G-EBUJ, however, is ready for engine overhaul, which will be carried out as soon as G-EBUK takes the air.

Mr. R. Johnstone resigned the captaincy of the club on transfer to Malacca, and Mr. W. I. L. Legg was appointed.

making, will soon be serious rivals in the matter of design and performance. Incidentally, their secretary, Capt. C. C. Hirst, of 71, Evelyn Avenue, Toronto (or the hon. secretary, S.M.A.E.), will welcome any inquiries regarding the Canadian development of model aeronautics. The Auckland (N.Z.) Model Airplane Club is also, we understand, about to become affiliated to the S.M.A.E. If, therefore, there are any model aircraft associations or clubs within the Empire which would be willing to "join up," please communicate with the Hon. Secretary, S.M.A.E., 23, Mayfair Avenue, Ilford, Essex, or with the Editor of FLIGHT.

R.I.B.A. Aerodrome Design Competition

THE designs submitted by the competitors in the Final Competition for the R.I.B.A. Competition for a design for an aerodrome will be on exhibition in the R.I.B.A. Galleries, 9, Conduit Street, W.1, from January 26 to February 2 inclusive (10 a.m. to 8 p.m., and to 5 p.m. on Saturday). The two prizes (£125 first, and £25 second) have been presented to the Council of R.I.B.A. by the directors of the Gloster Aircraft Co., Ltd., and Messrs. H. H. Martyn & Co., Ltd. The schemes deal with a London Aircraft Terminus suitable to the supposed requirements of air traffic 15 years hence. The jury to award the prizes consists of:—Sir Sefton Brancker, Sir Edwin Lutyens, R.A., Maj. R. Mayo, Mr. C. Cowles-Voysey, Mr. S. Vincent Harris, Mr. T. S. Tait, Mr. M. E. Webb and Mr. G. E. Woods-Humphrey.



This is Mr. "Harold Brooklyn's" Westland "Widgeon" monoplane somewhere in North Africa during the course of a present air tour. He is a private owner and often carries camping kit in his machine when touring.

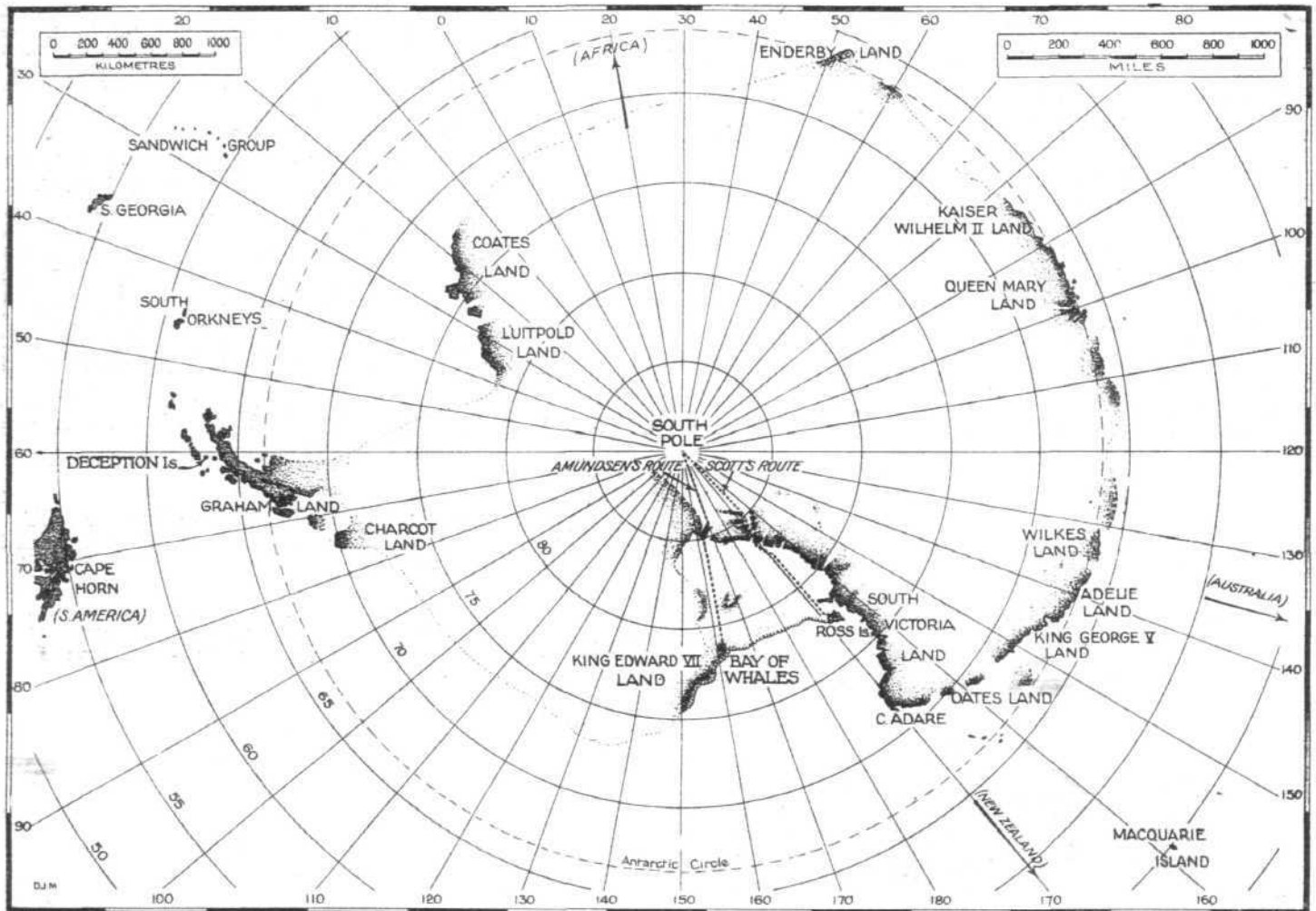
ANTARCTIC EXPLORATION BY AIR

It was only towards the end of last September that the Australian explorer, Sir Hubert Wilkins, set sail from New York for Deception Island to carry out a flight of discovery over Graham Land in the Antarctic. He has now completed his task according to reports from the American Press and is returning to civilisation. Next season he may return to extend the survey. With a non-stop flight of 650 miles in a Lockheed "Vega" monoplane he found that Graham Land is separated from the Antarctic Continent. Thus, a great problem has been solved with the very first Antarctic flight, justifying more clearly than ever the utility of aircraft for exploration.

By the old methods of progress Sir Hubert Wilkins would have been engaged on the completed survey for two or three Antarctic summers. The pilot of the Lockheed "Vega" on the flight was Lieut. Carl Eielson, who was the pilot on the

Pole. It will be located in the section of the Antarctic, where Capt. Scott and Capt. R. Amundsen made their bases for the South Pole discovery. On December 2 the expedition left Dunedin, New Zealand, for the base.

The machines to be used include a Fokker Super-Universal monoplane fitted with a Pratt and Whitney "Wasp" 450-h.p. engine, a Fairchild cabin monoplane, a Ford three-engined monoplane, an Aristocrat monoplane; and a D.H. "Moth" has also been mentioned. The Fokker monoplane has extra fuel tanks giving the machine a cruising radius of 2,500 miles. Of the total of four tanks three are fitted in the wing and the fourth on the floor of the cabin. There is accommodation for several passengers besides the pilot and mechanic in spite of the cabin tank, which can easily be detached if required. There is also room for loose gallon petrol tins. An oil tank of 15 gallons capacity and an expansion space of 20 per cent.



ANTARCTIC AIR EXPLORATIONS : Sir Hubert Wilkins' base is located at Deception Island off Graham Land which he has already explored by air. Commander Richard Byrd's expedition is to operate from the Bay of Whales in the section of the Antarctic from which Capt. Scott and Capt. R. Amundsen made their way to the South Pole.

same machine when the Arctic was flown from Point Barrow to Spitzbergen last year by Sir Hubert. Another pilot, Mr. J. Crossman, also helped on this Antarctic expedition, whilst the mechanic was Mr. Orval Porter. Pontoons were fitted for some of the flights, specially designed and constructed by the Fairchild Aviation Corporation to serve as emergency landing gear on ice as well as for the usual take-off from water.

The machine is a high-wing cantilever monoplane with a fuselage which looks like a monocoque but is really a bivalve with the halves of the shell made of spruce veneer glued together and pressed to shape in a huge mould under pressure. There is cabin accommodation for four to six passengers and side-door entrance. The pilot is in a front cockpit under a cut-out portion of the leading edge and the windscreen can be extended over this and totally enclose him. A Wright "Whirlwind" 220-h.p. engine is fitted.

Other exploration flights in the Antarctic can be expected soon by Commander R. Byrd's expedition, which is to operate from a base in the Bay of Whales, much nearer the South

of its volume is under the pilot's seat and can be filled during flight. It is air-cooled, having connections with the air stream. To obtain more warmth for the crew the fireproof bulkhead has been taken away, whilst further heat and ventilation are gained by the cockpit heater. A high-pressure Pyrene fire extinguisher system is installed to compensate for the absent fireproof bulkhead.

The "Wasp" engine has a new type manifold heater, through which hot air from the area round the exhaust is carried to the air intake. The heater is regulated by manual control. With standard adjustable nose cowling the heater gives the correct temperature for efficient operation of the power plant. Complete wireless apparatus is installed. The performance of this machine includes a top speed of 140 m.p.h. and a cruising speed of 118 m.p.h. with a landing speed of 42 m.p.h. Service ceiling is 18,000 ft. Commander Byrd's Fairchild cabin monoplane has a Pratt & Whitney "Wasp" engine, too, and some alterations were made for the exploration flights. New skis can now be fitted with a

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—Extract from "Flight,"
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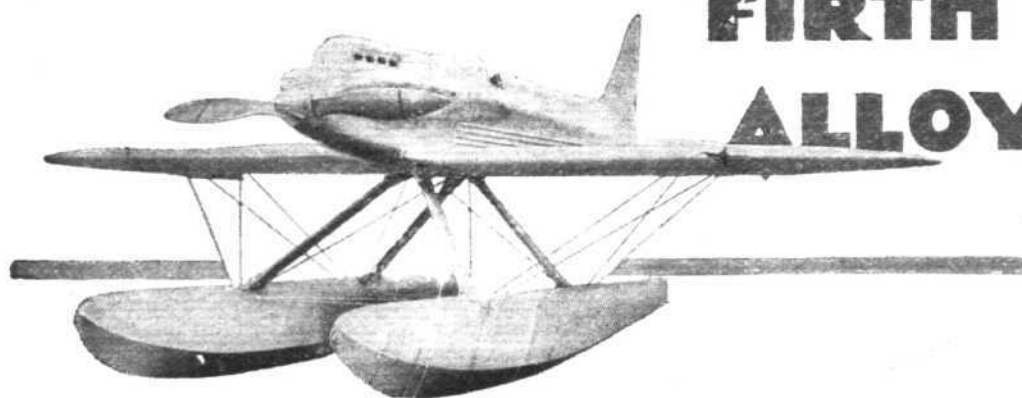
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The illustration shows the Supermarine-Napier S.5, which, piloted by Flight-Lieut. Webster, won the Schneider Trophy at Venice in September 1927, and established a World's Air Speed Record (100 k.m.) of 283.313 m.p.h.

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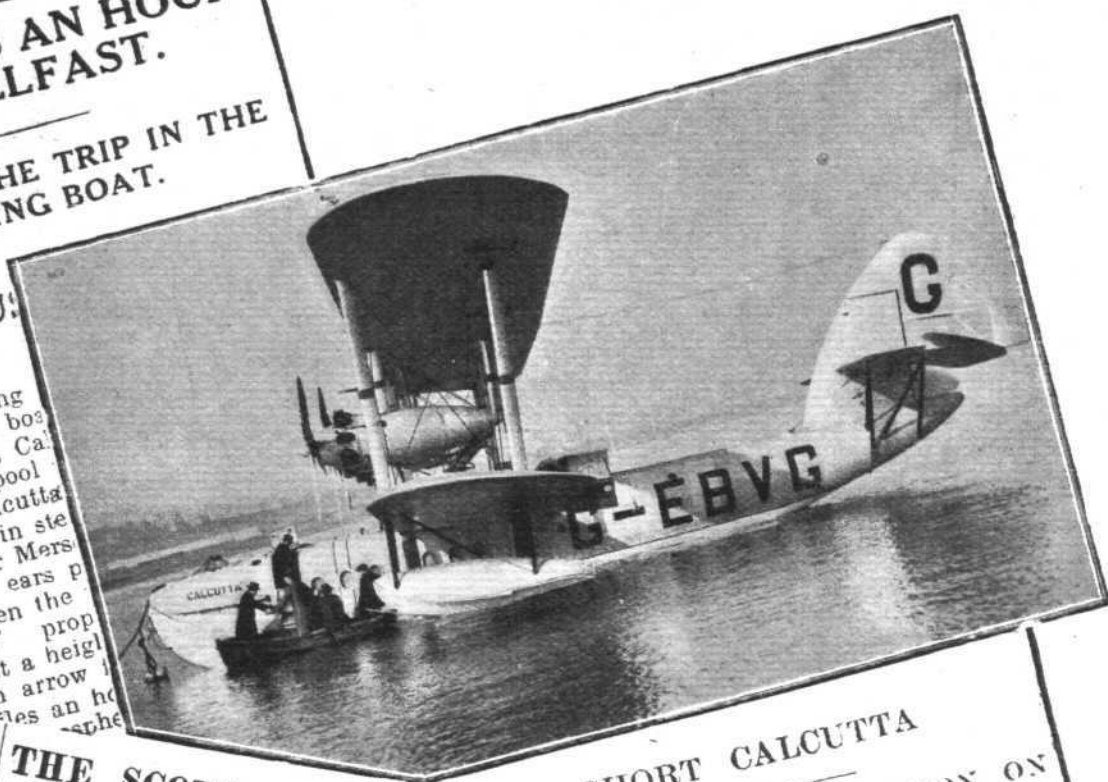
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to deafen the
engines' propellers
ward at a height
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The
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spread of 10 ft. in place of 7½ ft. Rudder area has been increased with a larger balanced portion. There is an air heater to keep the carburettor warm, thus preventing any water, which might get in, from freezing. For the purpose of photography, a 14-in. hole is in the floor cabin to take a camera, and the rear doors have oval holes to take oblique cameras. They are covered with black silk when photography is not required.

Wireless apparatus has been installed in the baggage compartment, having a radius of 2,100 miles, and three aeriels will be tried. The standard one is let down through the floor and left hanging, and another type stretches round wing tips and has a wind cone at the loose end which trails. A third type attaches to the wing tips and the tail.

Commander Byrd's pilots include Mr. Bernt Balchen, who accompanied him on his Atlantic flight in 1927, and Mr. Dean C. Smith, an air-mail pilot. The primary object of the expedition is scientific and if it is unusually fortunate much flying will be carried out and the explorers will be home before June. On the other hand they may have to winter and stay another year. They are expected at their base in the Ross Sea this month. An Antarctic winter is not so comfortable as in the North, owing to a more extreme isolation and severer weather. The Antarctic has more influence on the weather than the Arctic, and there is meteorological data

to be gained to justify these expeditions. From New Zealand, the base ship has a voyage of 2,300 miles south to the Ross ice barrier, and has to force through the ice pack after which come several hundred miles of ice-strewn water reaching to the ice barrier. Amundsen had his base in the Bay of Whales, and Byrd's base will probably be near there and situated on snow-covered ice which will enable him to have rooms dug in the ice for work places. This will be 2,300 miles from the nearest human dwelling. Seals and birds abound on the fringe of the continent and will supplement the food supply. Nearly 80 Eskimo dogs will be used for hauling and to assist in establishing smaller bases on the route to the South Pole. Bases will possibly be installed at distances of 100 miles, which will give a fair chance of survival in the case of a forced landing near them. On the final flight to the South Pole, after the last base is passed the airmen will depend entirely on their wireless and the reserve machines for rescue if forced down. It is not certain whether a landing will be made at the Pole as the latter is on a plateau 10,000 ft. high and the take-off again would be difficult with the load of petrol and equipment. In the event of a take-off again being impossible there would be no hope of rescue at that extreme position.

The Pole flight will be only one of the objectives of Byrd's expedition. It was not the objective of Sir Hubert Wilkins on his first season's work just finished.



Capt. Guest's African Flight

It is reported that Capt. F. E. Guest, M.P., who is making a flight to Central Africa, arrived at Algiers on January 9, and was due to leave the following day for Tunis and Tripoli. His companions are Sqdn.-Ldr. Soden and Mr. Fielden.

A "Latham" Lifebuoy Found

A LIFEBOUY marked "Latham, Paris," was washed ashore recently on the western part of North Cape, in Finmarken. The Latham flying-boat was the French machine which disappeared with Capt. Amundsen and Commander Guilbaud on board, after leaving Tromsø on June 18 to search for General Nobile's expedition.

French Experiment Fails

A NEW French flying-boat, a Paulhan-Pillard E. 5 monoplane fitted with three 450-h.p. Gnome-Rhone Jupiter engines, crashed during a trial flight over the sea at Saint-Raphael on January 8, and the crew of five were killed. The body of one, Lieut. Requin, was recovered. It has been stated since that the machine had been previously condemned by the French Air Ministry and further tests ordered to be abandoned. Apparently this order was not made known to the crew by the person responsible. Much had been expected of the monoplane, which was of all-metal construction.

Cairo-Cape Flight

THE Cairo-Cape Flight of the Royal Air Force will leave Cairo on February 12. A Flight of No. 45 Squadron has been selected for this. The usual routine, *via* Khartum, will be followed, and field operations will take place in co-operation with the 4th King's African Rifles at Jinja, with the 3rd K.A.R. at Nairobi, and with the 2nd K.A.R. at Taborah. The Flight will arrive at Cape Town about March 14 and then proceed *via* Durban to Pretoria. From Pretoria to Khartum it will be accompanied by a flight of the South African Air Force. The R.A.F. Flight will return to Cairo about the end of April, having flown about 11,300 miles.

Belgian Air Plans

FURTHER developments of Belgian aviation services to the Congo are in contemplation.

In the second half of January, M. Lippens, Minister for Aeronautics and head of the Belgian civil aviation service, will go to Paris for a conference with the representatives of French aviation. The object in view is the establishment of an aerial liaison between Belgium and the Congo across the Sahara. The line would eventually be extended across the Congo to Madagascar.

Belgian Air Budget

THE Belgian Budget for military aviation for the year 1929 amounts to nearly £300,000. It makes provision for modern bombing and fighting machines. By July 1

next, air squadrons at Evere, Bierse-Wans and Nivelles will have been brought to full peace-time strength. Gradually the Air Staff will be increased to 25 from the present number of four.

Air Mails to Kabul

A R.A.F. VICKERS "Victoria" biplane flew from Peshawar to Kabul and back on January 9, carrying mails for the British and Afghans. Permission has been granted for a weekly air mail service from India to Kabul. In all, 132 people have been taken from Kabul by air.

American Air Line for Five Countries

THE United States' first international air service linking five countries, including the British West Indies, was started on January 9 with the departure of four machines carrying mails and passengers from Miami, Florida, for Cuba, Haiti, San Domingo, the Bahamas and Porto Rico. A daily service will be maintained between Miami and Havana.

New Atlantic Flight Contemplated

MR. HARRY LYON, who was the navigator on the *Southern Cross* monoplane when it flew the Pacific Ocean under the command of Capt. Kingsford-Smith, contemplates a non-stop flight between America and England in the Spring.

Nobile's Rescuer in Rome

CAPT. LUNDBORG, the Swedish pilot, who rescued General Nobile by air after the crash of the *Italia* airship following its flight to the North Pole, was received by Signor Mussolini in Rome on January 14.

Six Days to India

IMPERIAL AIRWAYS will start in April the Empire air mail route of 5,000 miles to bring India within six days of Great Britain. The route will be flown in daily stages, the first being from London to Basle. Then the mails will be taken by train to Geneva and embarked from there on the second day on all-metal flying boats flying the Mediterranean to Cairo. That stage will take two days. Across the desert from Cairo to Basra *via* Baghdad will be flown on the fourth day, whilst the stage down the Persian Gulf to Karachi will absorb the remaining two days. It is proposed to extend the Empire air route across India to Calcutta and then *via* Singapore to Australia. A branch line from Capetown will connect with the main line at Cairo.

Sahara Air Service

A COMMERCIAL machine belonging to the Compagnie Generale Aeropostale has returned to Algiers from a successful reconnaissance towards the Sahara *via* El Laghuat, El Golea, In Salah and Reggan. An earlier reconnaissance was made *via* Colomb Bechar and Reggan. Some passengers were flown back on the last flight who had been held up on the Niger motor-car service.

THE ROYAL AIR FORCE FLYING-BOAT CRUISE

Log of the Far East Flight: Singapore-Australia-Singapore Section

In our issues for April 5 and August 9 last we published the official logs of the R.A.F. Far East Flight up to Karachi and Singapore respectively. This week we give the log of the last stage from Singapore around Australia and back to Singapore. The Flight was composed of four Supermarine "Southampton" flying-boats, each fitted with two Napier "Lion" engines. It was under the command of Group-Captain H. M. Cave-Browne-Cave, and left Plymouth on October 17, 1927.

The distance flown during the last stage was 10,190 nautical miles, a total distance since the Flight left England of 19,624 nautical miles or approximately 22,600 statute miles. This is the actual track flown from port to port, and does not include the distance flown circling towns or picking up formation. Since returning to Singapore the Flight has carried out a further cruise of more than 4,500 miles to Hong-Kong making the total distance covered on the whole flight more than 27,000 statute miles.

The flying time on the final stage was 144 hours 5 minutes, and the total flying time from the departure from England equalled 284 hours 35 minutes. This includes a small amount of local flying time at various places where the Flight stopped during the tour.

The average ground speed on the last section was 72 knots as compared with 67 knots on the stage from England to Karachi, and 66 knots between Karachi and Singapore.

In a covering report the Commanding Officer states:—The same crews, aircraft, engines, etc., which had flown from England, were used throughout this cruise from Singapore, round Australia, and back to Singapore.

The Flight left Singapore on May 21, 1928, cruised through the Dutch East Indies to Australia, Broome being reached on June 1, and thence along the west and south coasts of Australia to Melbourne, where it stayed during July. On July 30 the cruise was resumed along the east and north coasts of Australia to Port Darwin, which was reached on August 30, and thence through the Dutch East Indies to Singapore, where the Flight landed on September 15, 1928.

The aircraft and engines of the Flight have all been most satisfactory; they have given no trouble of any consequence, and have caused no forced landings. Only very minor replacements have been necessary, and they are still in very good condition. The water-tightness of the metal hulls and wing-tip floats has been excellent. As each engine has completed over 300 hours' flying, they are all being removed for overhaul, and the spare engines are being fitted for the next cruise to Hong-Kong. Three of the aircraft will be used again for the next cruise; the fourth, which is in the same condition as the others, is being left at Singapore, in accordance with Air Ministry orders, and its place will be taken by the spare aircraft, S.1127. The corrosion of rivet points in the hulls and the deposits of barnacles below the water line has been much less than on the earlier stages of the cruise.

The navigation of the Flight has given no difficulty in each of the open sea crossings (Koepong to Cape Leveque, 300 nautical miles; Thursday Island to Arnheim Point, 325 nautical miles; and Port Darwin to Koepong, 410 nautical miles). Good landfalls were made.

The health of the Flight has been very good. One officer had slight fever at Perth; but apart from that, all the Flight have been available for duty throughout the cruise.

The Commanding Officer emphasises that the arrangements made by the Dutch authorities and the Australian Government in connection with the flight were most satisfactory, and that at all ports of call the Flight was heartily welcomed and entertained. He adds that the effects of the flight generally have been of great value.

The log of the flight (giving distance in nautical miles, flying time, and average ground speed in knots) is as follows:—

Monday, May 21. Singapore—Klabat Bay. 220 miles. (3 hrs. 30 mins.; 63 knots.)—At 05.45, moorings were slipped, the weather being fine with a rain-squall approaching from the N.E.; the sky was 0.8 clouded. Owing to the very low water and the many fishing stakes, which were difficult to see, the Flight took off independently at 05.55 in an average of 19 secs. (300 galls.), and left in formation for Klabat Bay. The weather conditions during the flight were generally fine, with occasional local rain squalls during the first half of the flight; the wind was northerly up to 10 knots for the first hour and then varied between E. and S.E. up to 5 knots for the remainder of the flight. The equator was crossed at 07.33, and a bottle containing the Flight visiting cards marked to H.M. Father Neptune was dropped to mark the first crossing of the Equator by a Flight of R.A.F. Flying-Boats. The route, which passed Pulo Batam, Mesana and Kutar Islands, was favourable for the operation of flying-boats, as there were many islands to afford shelter in emergency. The Flight landed in formation in Klabat Bay at 09.25, after a circuit of Blinjet, and secured to four moorings about half-a-mile from the landing quay.

The Flight remained at Klabat Bay on Tuesday, May 22, where they were most hospitably entertained as guests of the Dutch Government.

Wednesday, May 23. Klabat Bay—Batavia. 320 miles. (5 hrs. 45 mins.; 60 knots.)—At 05.55, Flight took off in formation in 25 secs. (300 galls.) and, after circling, course was set at 06.00 direct to Muntok over the island, on which a considerable amount of clearing had been done. Muntok was passed at 06.45, the wind then being S.E. 12. The Flight then proceeded between Banka and Sumatra to First Point, where course was set for Batavia at 08.05. S.S. *Malabar*, the only ship seen during the Flight, was passed at 08.07. As far as could be seen inland, the coast of Sumatra was uninhabited jungle with mangrove swamps near the sea. At 08.50, S.1151 landed in position 3° 4' S. 106° 17' E. The landing was due to one of the accumulators, which was being charged, catching fire; the pilot, finding he was being partially choked and blinded by the smoke and fumes, which were streaming out of the cockpit past him, landed immediately. The remainder of the Flight circled round S.1151. Owing to the roughness of the sea and the damage to S.1151 batteries, lamp signalling was unsatisfactory, and S.1152 landed to ascertain whether assistance was required. The burning battery in S.1151 was put out, nothing else catching fire, and as soon as the hull was clear of fumes S.1151 reported she was ready to proceed; S.1152 then took off at 09.15, followed by S.1151. Both flying-boats, which at the time were carrying 180 galls. of fuel each, took off satisfactorily in the 4-ft. sea and 15-knot wind. The Flight reformed and flew direct to Tanjung Priok (the port of Batavia), landing there at 11.45. Three Dutch two-seater seaplanes (apparently Brandenburgs) escorted the Flight in.

Thursday, May 24, was spent at Batavia.

Friday, May 25. Batavia—Sourabaya. 375 miles. (6 hrs.; 62 knots.)—At 06.00 moorings were slipped, the weather conditions being fine with an overcast sky. The flying boats taxied out in succession through the shipping to the entrance of the harbour and took off there in succession between 06.10 and 06.15, the average "take off" time being 30 secs. (400 galls.). The Flight circled to Priok in formation, and left for Sourabaya at

06.18, being escorted for 10 mins. by three Dutch two-seater Brandenburg seaplanes. The course followed was Sedari Point, Inderamayu Point, Cape Janom and Panka Point, where three Dornier Wal (two Eagle IX engines in tandem) flying-boats from the Dutch Naval Air Station at Sourabaya joined the Flight and escorted them to Sourabaya. The coasts were mainly flat and swampy with fish-ponds on the points and high ground inland. The wind varied from S. to E., 5 to 12 knots. There was a swell except under the lee of the land, and at times the sea was moderate. The sky was 0.7 covered with clouds for the first three hours, and the average height of the Flight was 600 ft.; it then cleared for the remainder of the flight, which was at 1,000 ft. The visibility was good. The Flight landed in formation in the open water off the seaplane base at 12.12 and taxied in line ahead up the long, narrow channel to the moorings near the seaplane sheds, the Air Station Band playing the British and Dutch National anthems and the Dutch seaplanes circling overhead. This channel is straight and runs N. and S.; there is a buoy carrying a green light at its seaward end and two leading marks on shore which are in line to a boat in the channel. The moorings were conveniently laid and there was no trouble in finding them or mooring up. On completion of refuelling, all crews went ashore. The duty officer and the duty airmen were accommodated in the Dutch Air Station quarters, where there were good anti-mosquito arrangements. This is the first time since leaving Singapore that the flying-boats have been left without their guard of one officer and four airmen on board, and the reason for this departure from normal routine was that the Air Station Medical Officer reported there were malarial mosquitoes at the mooring site at night. The moorings were secure, well sheltered and free from traffic, there were good facilities for putting the crews on board the flying-boats in case of emergency, and a searchlight on the pier, which enabled the flying-boats to be watched at night.

The Flight remained at Sourabaya during Saturday, May 26, and Sunday, May 27.

Monday, May 28. Sourabaya—Bima. 375 miles. (5 hrs. 40 mins.; 65 knots.)—At 05.50 moorings were slipped and Flight taxied out of the approach channel in line ahead. During this taxiing, S.1151 grounded lightly on a bank. The Flight took off in formation in 30 sec. (400 galls.) at 06.10 and after circling Sourabaya in formation with an escort of three Dutch twin-float seaplanes, left for Bima.

The weather was fine with a slight haze and a light westerly wind for the first half-hour, the haze then cleared and the wind varied between S. and E. from 10 to 15 knots for the remainder of the flight. The average height of the flight was 500 ft., as there appeared to be a stronger head wind higher up; it was rather "bumpy" near the various headlands that were passed. The sea was moderate with a slight swell in the open, it was calm under the lee of the land. At 11.50 the Flight landed in formation at Bima and secured to the buoys near the East shore of the bay.

On Tuesday, May 29, the Flight remained at Bima. All crews dined, and slept in the flying-boats, which were too far from the shore for any mosquitoes or flies to come on board.

Wednesday, May 30. Bima—Koepong. 310 miles (5 hrs., 20 min.; 60 knots.)—The Flight took off in formation at 06.00 in 30 sec. (350 galls.) and left for Koepong. The course followed was past Komodo Island, through Sapeh Strait and South of Flores. The weather conditions were generally good with winds varying from S. to E. from calm to 10 knots. A small water spout was sighted about 5 miles away between Langkoi and Kerita Point. The open sea was moderate for the first half of the flight, but on nearing Koepong the wind and sea were calm. During the early part of the flight there were cumulus clouds on the mountain and heavy clouds to the north; the sky was clear later. The visibility generally was good, and exceptional near Timor, which was sighted 80 miles away. After circling Koepong the Flight landed in formation at Tenau in Semau Strait, about 3 miles S. along the coast from Koepong, at 11.20, and secured to moorings there. This site had been chosen by the local authorities as there is frequently a swell at Koepong at this time of year. The Flight spent Thursday, May 31, at Koepong.

Friday, June 1. Koepong—Broome. 470 miles (6 hrs. 55 mins.; 68 knots.)—The Flight took off in formation at 05.40 in 53 secs., with 500 galls. of petrol. The course followed was across Roti Strait, direct to C. Leveque and down the coast to Broome. The weather which was clear at the start, clouded over about 06.00, when a rain squall was passed 2 miles to port. Light rain was flown through from 06.15 to 06.30, and there was heavier rain to the eastward. There was considerable swell for the first hour, but afterwards the sea was slight to calm. At 07.20 Ashmore Reef was passed; when first sighted this was completely covered with birds, as the formation got closer the whole surface of the reef seemed to lift as the many thousands of birds took off together and flew away. Four schooners were sighted near the W. end of the reef; these were the only ships sighted during this flight. At 07.30, the sky cleared. At 10.20 land was sighted on the port bow and at 10.37 Cape Leveque was sighted dead ahead. The wind varied between N., N.E., and E. 8 to 10 knots till 08.00, it then changed to E.S.E. and died away.

On passing C. Leveque at 10.55 the wind was S.W. 8 knots, and this continued to the end of the flight. At 11.40, when near C. Baskerville, the R.A.F. amphibian "Widgeon" II was sighted flying up the coast about 1,000 ft. above and to seaward of the formation.

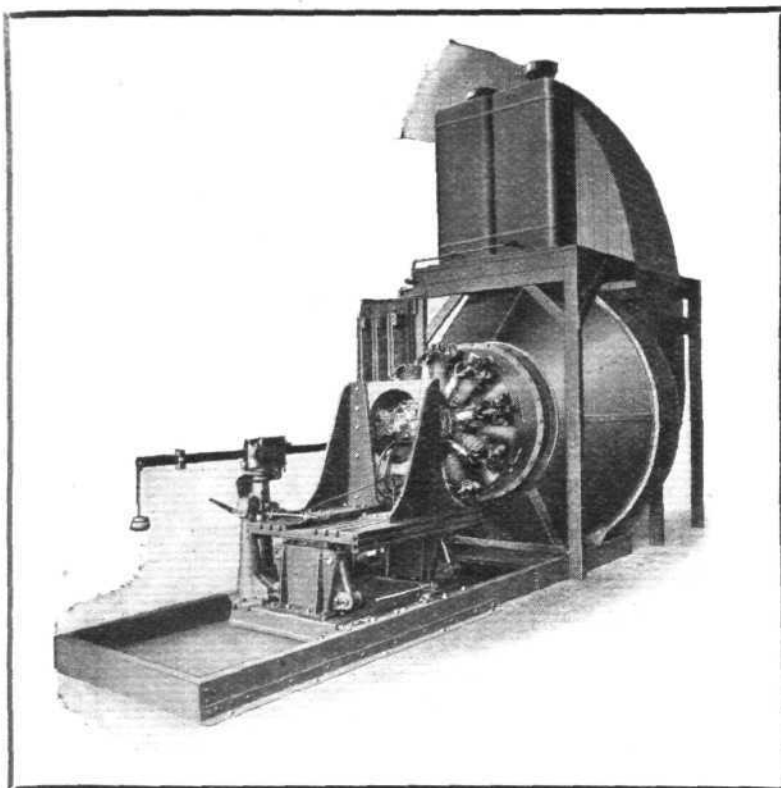
The Australian coast consisted of sandy beaches with a few patches of red sandstone. The land was low and flat to the horizon, covered with brush and scrub. Two small sheep or cattle stations were passed, but otherwise there was no sign of life till Broome was reached.

After circling Broome, the Flight landed in formation at 12.40 and secured to the moorings there. The Flight was met by Squadron-Leader Delarue who was in charge of the ground organization for the Flight in Australia. Wing Commander Wackett, the pilot of the "Widgeon" II, came on board the flying-boats during the afternoon to welcome the Flight; he had landed the "Widgeon" at the Aerodrome and secured her there for the night.

After completing the work in the flying-boats, the officers and airmen off duty went ashore as soon as the tide was sufficiently high to get a skiff to the pier. The local school children had been given a holiday and two expeditions of prospectors who were exploring the interior had also come into Broome to meet the Flight. One of these expeditions, under Mr. Terry was equipped with Morris 6-wheelers, similar to those used in the R.A.F.; the other, the MacRobertson Round Australia Expedition, under Mr. Dunkerley, was using Carnier six-wheelers.

The Flight stayed at Broome on Saturday, June 2.

From the experience gained at Broome it is considered unsuitable for a seaplane base, except in emergency. The rise and fall of the tide was 28 ft.; this leaves a long expanse of soft mud between the shore and the sea at low tide, and prevents moorings for seaplanes being laid in the small area of sheltered water available. The tide at the moorings was about 2 knots.



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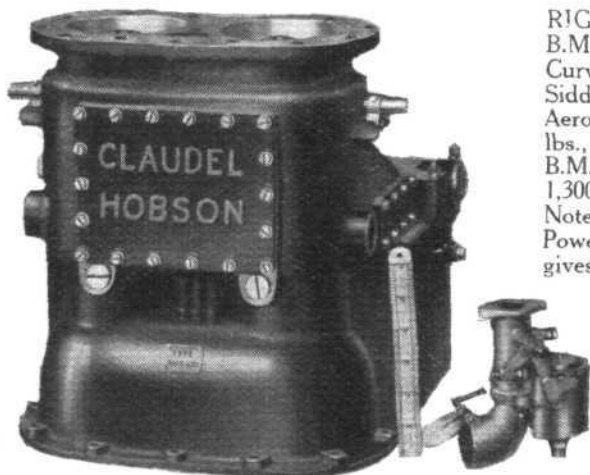
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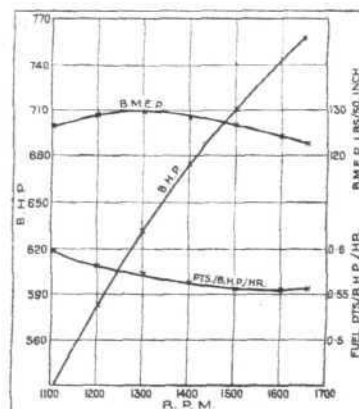
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RIGHT: Graph showing Power, B.M.E.P. and Consumption Curves of the Armstrong-Siddeley 700-750 h.p. "Leopard" Aero Engine. Torque, in inch-lbs., at any point equals $236 \times$ B.M.E.P. Maximum torque (at 1,300 r.p.m.) 30,584 inch-lbs. Note how the Claudel-Hobson Power Jet Carburetter fitted gives maximum power with economical cruising.

LEFT: Illustration showing the type AVT 100 Claudel-Hobson Carburetter compared with one of the same make as fitted to many cars.



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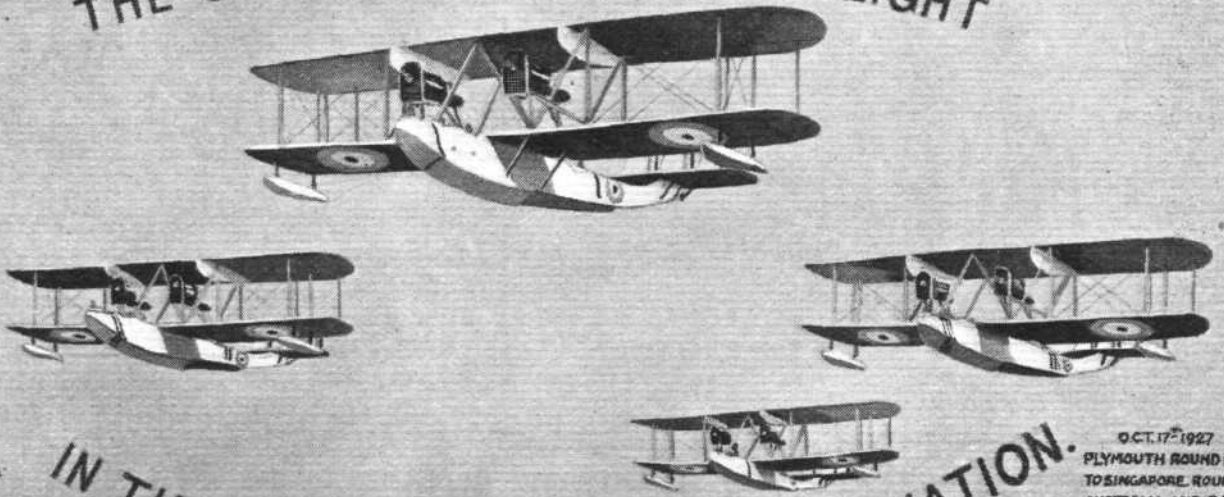
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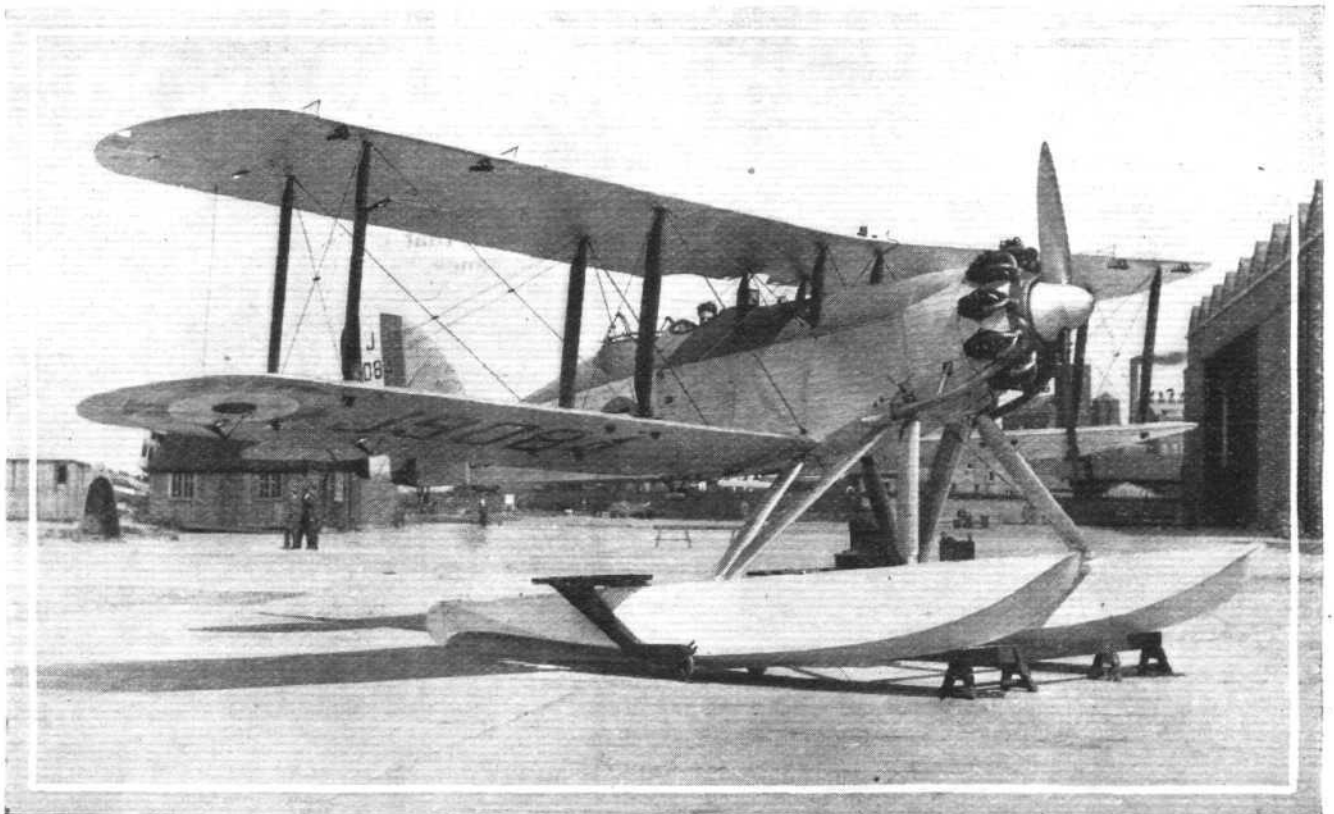
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At 08.00 the wind was S.E. 15—20 knots, and there was a moderate sea at the moorings. At 08.15, the eye splice in the mooring wire to which the mooring pendant of S.1151 was shackled, pulled out, and that flying-boat started to drift quickly towards the shore. Sergt J. Semple was the airman on duty in S.1151, he promptly stowed the front awning and engine covers, started both engines, taxied into a safe position, and anchored; the anchor dragged and S1 was taxied to a new position with better holding ground and re-anchored satisfactorily. The duty officer was in S.1150 with an airman. They launched the rubber dinghy to go to S1's assistance, but before they could do so, the mooring gear of 50 parted between the sinker and the buoy, and she started to drift; awnings and engine covers were stowed, the engines started and 50 was taxied to a safe position and anchored satisfactorily. The moorings of S.1149 and S.1152 held. A message had been signalled to the shore as soon as S.1150 started to drift, and the officers and airmen off duty returned to their boats as quickly as possible, but this took two hours, due to the shallowness of the water near the shore, the distance of the flying-boats from the shore, and the lack of boats suitable for taking off the crews in a moderate sea and wind. The mooring gear to which 51 had been secured was repaired, and she was re-secured to it; the mooring gear for 50 was beyond repair, two 1-cwt. anchors were borrowed from the shore with 30 fathoms of 2½-in. coir rope for each, these were laid out and the flying-boat's mooring gear shackled to it. No further trouble was experienced with the moorings.

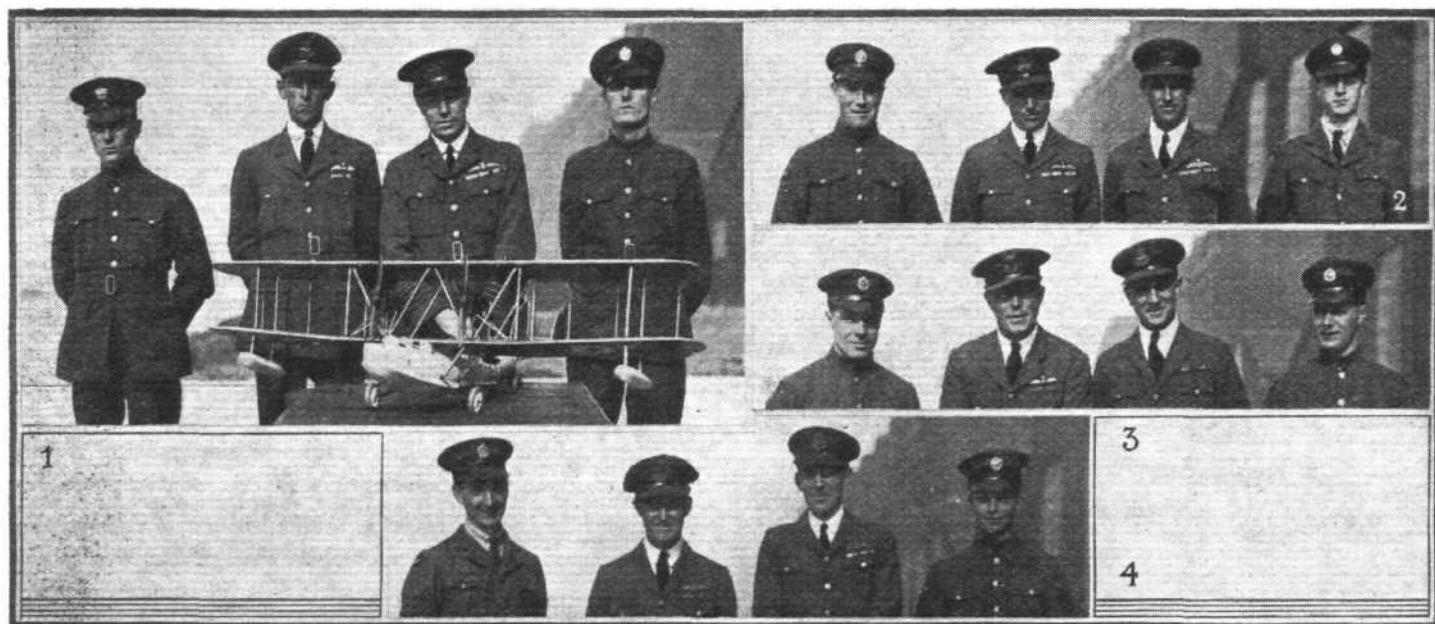
Owing to the exposed position of the moorings at Broome, and as the residents expected stronger winds next day, it was decided to leave at dawn for Port Hedland.

All officers and airmen dined and slept in the flying-boats; anchor watch being kept in case of further trouble with the moorings. A favourable weather forecast for the flight to Port Hedland was received. Telegrams were received from the Prime Minister of Australia, and the Minister for

A telegram congratulating the Flight on its arrival in Australia was received from the Secretary of State for Air.

Squadron Leader Delarue arrived by Air Mail on Tuesday evening to see that the arrangements for the Flight were satisfactory.

Wednesday, June 6. Port Hedland—Carnarvon. 495 miles. (7 hrs. 55 mins.; 62 knots.)—Owing to the small area of water available, engines were warmed up at the moorings, each flying-boat slipping its moorings and taking off before the next one slipped. The weather was fine, with no cloud and good visibility, the sea in the harbour was calm. The first flying boat started engines at 06.10, and all boats were flying in formation by 06.30; the average take-off time was 45 secs., with 500 gallons. After circling Port Hedland and being joined by the "Widgeon" II, which had taken off from the aerodrome, the Flight left for Carnarvon at 06.35. The coast was followed to Onslow, where course was set for N.W. Cape, which was passed at 10.37. The coastline was then followed to Carnarvon, where the Flight landed in formation at 14.15. The weather was fine and sea slight, with southerly winds of 5 to 10 knots as far as Onslow. The wind then changed temporarily to N.E. and back to S., increasing to 20 knots, with heavy rain lasting 20 mins., a rough sea and low visibility; it was bumpy. The rain stopped 10 mins. before N.W. Cape was reached, the sky then being overcast with low clouds. After N.W. Cape the weather was fine and the sky gradually cleared; the sea remained rough, and the wind S. 15 to 20 knots, and bumpy to C. Farquhar, when the wind and sea gradually dropped. The country passed was similar to that farther north—flat, with occasional low hills, sandy and covered with brush and spinifex grass. There appeared to be several good anchorages to the S. of Nickol Bay in the Dampier Archipelago and near the sea products refinery by Cloates Bight. A reef, about a mile from the land, stretches south from the N.W. Cape for about 120 miles; there were heavy breakers on this reef, but inside it the water was comparatively calm. Seven pearling luggers



THE ROYAL AIR FORCE FLYING-BOAT CRUISE : The officers and men who set out from Plymouth on October 17, 1927, in four Supermarine-Napier flying-boats on a flight to Singapore—the cruise subsequently being extended to Australia and other Eastern ports. (1) The "Flagship" : Group-Capt. H. M. Cave-Browne-Cave (right centre) and Flight-Lieut. H. G. Sawyer. (2) Boat No. 1 : Sqdn.-Ldr. G. E. Livock (left centre) and Flight-Lieut. P. E. Maitland. (3) Boat No. 2 : Flight-Lieut. D. V. Carnegie (left centre) and Flying Officer G. E. Nicholetts. (4) Boat No. 3 : Flight-Lieut. G. G. Wigglesworth (left centre) and Flying Officer S. D. Scott. It should be pointed out that certain "modifications" of the personnel were effected during the progress of the cruise—for instance, two of the airmen were replaced by their equivalent weight in extra spares and stores.

Defence, welcoming and congratulating the Flight on their arrival in Australia, and messages of thanks were sent in reply.

Sunday, June 3. Broome—Port Hedland. 260 miles. (3 hrs. 30 mins.; 74 knots.)—The Flight took off in formation at 06.05 in 22 secs., with 300 gallons petrol. After circling Broome and being joined by "Widgeon" II, which had taken off from the aerodrome, the Flight proceeded down the coast to Port Hedland. The weather conditions during the flight were good, with good visibility and no cloud; the wind varied between E. and S.E. from 10 to 15 knots; it was bumpy at 1,000 ft. but steady higher up; the sea varied between slight and moderate.

The pearling fleet, consisting of about 70 luggers, was passed about 10 miles to seaward, and two miles North of the end of Eighty Miles Beach; there was a smaller pearling fleet 7 miles further South. The coast is sandy, with a few low cliffs of red sandstone; the Eighty Miles Beach is a wonderful stretch of sand with a few hillocks 10 to 20 ft. high. The hinterland is low and sandy, with a little grass and scrub; it is used for sheep. It was noticeably colder in the flying-boats during this flight, the temperature in the hull at 09.00 at 2,000 ft. was 64° F. After circling Port Hedland in formation, the Flight landed there in succession (due to the small area available) at 09.35, and secured to moorings laid in the channel to the S.E. of the pier. The "Widgeon" II landed at the aerodrome.

During the next two days the Flight remained at Port Hedland, which is a small town of about 100 inhabitants. There is an aerodrome at Port Hedland which is a regular port of call for the aircraft of Western Australian Airways on the Perth-Derby route. Many of the sheep stations in the district have their own aerodromes.

A visit to the De Grey Sheep Station, about 50 miles inland along a bush track, was arranged, and thoroughly enjoyed by the officers and airmen off duty. The station extends over about 600,000 acres, and carries some 50,000 sheep, which were being shorn at the rate of 2,000 a day at the time of the visit. During the journey a large number of kangaroos were seen, and wild pig and turkey were shot.

Topes were discarded, oil coolers were removed, and stowed.

were passed about 20 miles N. of Onslow, and the divers could be seen moving on the bottom in about 10 fathoms.

The average temperature in the hull during the flight was 61, and Evans' jackets were worn.

The landing area at Carnarvon was marked by a motor boat carrying a wind indicator on a mast, and after landing the boats were taxied down a buoyed channel to moorings about 1½ miles away and ½ mile from the shore off Mangrove Point.

Communications between the mooring site and the shore is very difficult, except near high tide. The fuel had been stored ashore, and the only boat available for bringing it off could only carry about half the quantity required. This boat had been loaded up and anchored near the mooring site before the flight arrived, and the first half of the refuelling was done without trouble. The fuel boat had grounded as the tide went out, and the remainder of the fuel could not be got out till 02.00 the following morning. Refuelling to 500 galls. was completed by 04.00, each boat taking in about 400 galls. The landing and mooring areas at Carnarvon are very exposed and the weather forecast was for heavy N.W. to W. weather off the W. coast. As it would have been unsafe to leave the flying-boats without their full crews under these circumstances, and as it was necessary to "take off" with full load on the next stage, it was decided to leave for Perth at daylight.

Thursday, June 7. Carnarvon to Perth. 460 miles. (6 hrs.; 77 knots.)—At 06.40 moorings were slipped. The weather was fine with a clear sky, good visibility, and a slight swell. The Flight taxied out clear of the shoals and took off independently in Tecos Channel at 06.55 in an average of 35 secs., carrying 500 galls. of petrol, and left for Perth accompanied by "Widgeon" II, which has taken off from the aerodrome. The course followed was over Shark Bay, where there are many sheltered inlets apparently suitable for flying boats, but with poor land communications; across the neck of land south of Freycinet Estuary to the open sea, and thence down the coast to Geraldton and Perth. Geraldton was an emergency base for the Flight, it was not required and appeared rather open. Fort Gregory appears to have good but limited deep water sheltered from all directions.

South of Geraldton the reefs running south near the coast provide comparatively calm water. The country is very similar to that in the north, but more hilly further south. The first green fields seen since reaching Australia were a few miles north of Geraldton, and south of this the land appeared more fertile and populated. The weather during the Flight was variable with many small rain storms, the worst of which were avoided by altering course temporarily to seaward. The wind was generally between north and east, from 10 to 15 knots, with a rough sea. The height of flight was from 500 to 1,000 ft., with a strut temperature of 55 to 57. After circling Perth the Flight landed in formation in Matilda Bay, Crawley, at 12.55, and secured to the moorings there. The "Widgeon" II landed and moored beside the Flight. Sqdr.-Ldr. Drummond (R.A.F., attached R.A.A.F.) who was in charge of the arrangements at Perth, met the Flight on arrival and was very helpful throughout the stay.

The Flight spent Friday, June 8, to Thursday, June 14, at Perth. The temperature in the hulls varied between 69 and 49; it was pleasantly cool on shore by day, but cold sleeping in the flying-boats at night. At the moorings the wind was very variable, the strongest being south-west 25 knots; it was gusty, especially during the rain squalls. It is understood that during the majority of the year the weather is fine and warm. The mooring and landing site at Matilda Bay was excellent during the stay of the Flight, but might be rather crowded with pleasure craft during the summer. The rise and fall of the tide is about 3 ft., and its speed is less than 1 knot.

Friday, June 15th. Perth—Albany. 270 miles. (3 hrs. 50 mins.; 70 knots.)—The weather was fine with good visibility, a clear sky and a calm sea. The Flight slipped moorings in succession between 06.45 and 06.55. After taxiing to warm engines the Flight took off in formation at 07.10 in 22 secs., with 350 galls. of petrol. In spite of the start before sunrise a large crowd had assembled at Crawley to see the Flight leave. After circling Perth the Flight proceeded to Fremantle, where the two Japanese training cruisers, *Isumu* and *Yakumo*, were seen approaching the port, and thence down the coast. Peels Inlet, which appeared to be well sheltered, was passed at 07.40. Bunbury also was well sheltered and might be suitable as a seaplane base; the Flight circled here in formation in accordance with a request which had been made by the Mayor. Ten miles south of Bunbury course was altered, and the Flight crossed the land to 5 miles east of C. Leeuwin; the land here was very heavily timbered, except near the coast. The Flight then proceeded along the coast to Deebank, which was flown over in accordance with requests received from the Mayor and the Returned Sailors and Soldiers' League, and landed in formation in Princess Royal Harbour at Albany at 10.55, securing to moorings in Hanover Bay to the east of Town Jetty. The coast between Perth and Bunbury and also between Entrecasteaux Point and Albany, appeared to have many stretches of sheltered water for emergency landings.

The weather was perfect throughout the flight, with a clear sky and exceptional visibility. The wind varied between north-east and west 5 to 10 knots. There was a slight swell on the west coast and a moderate swell on the south coast. The week-end was spent at this town.

Princess Royal Harbour appeared suitable for a flying-boat base, and the proposed site for it on the shore of Princess Royal Harbour, to the east of our moorings and between Town Jetty and Deep Sea Jetty, was visited. It appeared to be quite satisfactory and the most suitable site.

S. 1152 narrowly escaped serious damage when a steamer, loaded with sightseers, came too close as the flying-boat suddenly swung to a gust of wind.

Tuesday, June 19 Albany—Israelite Bay. 330 miles. (4 hrs. 30 mins.; 73 knots.)—Moorings were slipped at 06.40, the weather being fine, visibility good, sky clear, sea calm, wind N.W., 3 knots. At 07.00 the Flight took off in formation in 40 secs., carrying 500 galls. of fuel. A large crowd had come down to the jetty to see the start. After circling Albany, the coast was followed to Hood Point, thence across Doubtful Bay to West Island, past the entrance to Esperance Bay, C. Le Grand, C. Arid, and C. Pasley to Israelite Bay, where the Flight landed independently at 11.30 and secured to the moorings about ¼-mile to seaward of the jetty. A large smoke fire had been lighted at Doubtful Bay, and as the Flight passed over the people beside it were cheering.

From Albany to Hood Point the coastline is irregular with cliffs of grey rock, partially covered with scrub and with open plains behind; there are a number of sandy beaches where a seaplane could be beached and temporary shelter found in any wind. The S.S. *Kyara*, anchored in Bremer Bay, was the only ship sighted. From Hood Point to Esperance the cliffs are lower and the coast less broken, there are many islets and reefs off the coast. From Cape Le Grand to Cape Arid the hills appear to be volcanic with rounded tops, and from Cape Arid to Cape Pasley there are sandhills.

During the flight the weather was fine with a clear sky and good visibility. The wind at first was N.W. 3 knots, but soon changed to N, varying between 10 and 15 knots; there was a slight swell which increased to moderate at times. The average height of the Flight was between 1,000 and 2,000 ft., where the coldest hull temperature was 47, with a strut temperature of 44 deg. F. Since arriving in Australia the shutters on the full tropical radiators had been gradually closed, and they now were about ¼-shut to maintain the water temperature at 70° C. whilst cruising; the oil temperature (no coolers) was about 50° C.

The mooring buoys at Israelite Bay consisted of baulks of timber protected by rope fenders. They were very hard to see from the air, as they were nearly submerged, and hard to secure to, as the weight of the shackle and eye of the mooring wire, secured to what was intended to be the top, caused the buoys to float wrongside up.

Israelite Bay is uninhabited; the nearest people live on a small farm about 70 miles away and they had very kindly come down to see the Flight and assist with the refuelling. There are no roads, and the journey had been difficult, the car having to be dug out twice and breaking a rear spring. There are no railways, and the normal method of heavy transport appeared to be by wagons drawn by camels. The farmers removed the fuel tins from their cases and transported the fuel tins to the seaward end of the jetty for the Flight. There was no boat to Israelite Bay, and consequently the only means of getting ashore, or transporting the fuel to the flying-boats, were the R.A.F. rubber dinghy carried by each flying-boat. These rubber dinghies were rowed ashore where each was loaded with 10 4-gall. tins and took a further 10 tins in tow, and they were then rowed out to the flying boats, returning again for the next load. Early in the afternoon the wind veered to the N. and increased to 15 knots, raising a choppy sea, and it became very difficult to row the laden dinghies the ¼-mile from the jetty to the flying-boats against this wind and sea. The two nearest boats, S. 1149 and S. 1152, were refuelled in this way; S. 1150 taxied in close to the jetty and lay there to her anchor with her engines running, whilst three of the rubber dinghies refuelled her; she then towed the last load of fuel to S. 1151. By 16.00 the Flight was refuelled to full tanks (500 galls), each flying-boat taking in about 230 galls. The rubber dinghies stood the strain very well indeed and gave no trouble; a pair of the short oars supplied with the dinghies was tried against longer oars made by the Flight at Singapore; one of the former broke and the latter were much better in every way.

Wednesday, June 20. Israelite Bay—Murat Bay. 515 miles. (7 hrs. 10 mins.; 73 knots.)—Moorings were slipped at 06.20, the weather being fine, visibility good, sky clear, slight swell, wind N.W.W., 5 knots. At 06.35 the Flight took off in formation in 30 secs., carrying 500 galls. of fuel and course was set for Eucla, which was passed at 10.15, the Flight then

proceeding to Cape Adieu and thence direct to Murat Bay. The wind was W., 10 knots, shortly after leaving, with a short sea from the N. and a southerly swell; it gradually changed through W. to S. by 11.30, varying between 5 and 10 knots, with a calm to slight sea, and it remained so for the remainder of the flight. It was fine till Eucla, with occasional showers from Eucla to Murat Bay; the visibility was good except in the showers. The coast from Red Rock Point to Eucla was flat and sandy; to the E. of Eucla there are cliffs. The country seen up to Port Eyre was flat scrub covered plains, and the whole area, including Eucla, where the town is still standing, appeared to be deserted. The coastline of the Bight from Israelite Bay to Point Eyre, some 450 miles, offers no shelter for flying-boats, with the possible exception of the reef off Eucla. After circling Ceduna, where the "Widgeon II" was seen pegged down in a temporary aerodrome, the Flight landed in formation in Murat Bay at 13.45, and secured to buoys which had been laid in line with Ceduna jetty and Cape Tarbenard. The Flight was met by Wing-Commander Wackett, who had flown overland in "Widgeon II" from Perth, and by the fuel agents. The Flight refuelled at once to 400 galls. from 4-galls. tins brought alongside in skiffs; about 240 galls. was taken in by each boat in an hour.

The Flight remained on Thursday, June 21, at Murat Bay.

Friday, June 22. Murat Bay—Adelaide. 350 miles. (5 hrs. 15 mins.; 66 knots.)—A showery morning with an overcast sky and a slight swell; wind N.W. 5 knots. Moorings were slipped at daylight, and the Flight took off in formation at 07.30 in 26 secs., carrying 400 galls. of fuel, and proceeded down the coast, being joined by "Widgeon II", which had taken off from the aerodrome. The W. coast of Eyres Peninsula was followed, cutting off Horse Peninsula, thence across Spencer Gulf to the South coast of Yorke Peninsula and across the Gulf of St. Vincent to Adelaide. The wind, which was N.W. at the start of the flight, backed round to S. and increased to 15 to 20 knots during the first hour, and this wind continued till the last hour, when it decreased to 5 to 10 knots. There were many light and a few heavy rain squalls, the latter were generally avoided by small alterations of course; one, which was flown through quickly, covered a wide stretch of sea, and it was extremely bumpy immediately before and after this squall, and for a short time one of the flying boats was losing height, although the engines were opened up to full throttle temporarily. The sea was slight at the start, but soon increased to rough, and continued so till the last hour, when the rain stopped, the sky partly cleared, the wind dropped to 5 to 10 knots, and the sea moderated. This improvement was only temporary as there was heavy rain and a strong gusty wind shortly after the Flight had moored up. The height of the Flight varied from 500 to 1,500 ft., to suit the conditions. On arrival over the mooring site, off the W. shore of Torress Island, a wrecked Southampton, bottom upwards, was seen to be secured to the end mooring.

As the weather was threatening the Flight circled Port Adelaide and landed independently at the mooring site and secured to the moorings there. The "Widgeon" II landed at the old aerodrome at Albert Park. The wrecked Southampton at the end mooring was S. 1158 belonging to the R.A.A.F., which had been flown from Melbourne to Adelaide last Wednesday; while lying at the end mooring being prepared to fly out to meet our Flight, this flying boat had been struck by a whirlwind, which lifted it and capsized it about two hours before our Flight arrived; fortunately no one was injured. Subsequently this flying boat was salvaged and sent to Point Cook for rebuilding.

As the weather was still threatening, tail planes were set to maximum incidence and elevators lashed forward so as to reduce the chance of the flying-boats lifting in heavy gusts.

A warning to expect a heavy squall at daylight was received from Weather Bureau, Melbourne, and the crews in the flying boats stood by accordingly. There was heavy rain in the night, but the weather at daybreak was calm and no trouble was experienced.

From Saturday, June 23, to Thursday, June 28, the Flight remained at Adelaide.

In spite of some difficulty of getting to and from the mooring site H.E. the Governor and Lady Hore-Ruthven came down with a party and inspected the flying boats. The Governor and his A.D.C. (Capt. Grosvenor) went for a short flight in S. 1150. Members of the Ministry and a few private visitors also came to see the flying-boats.

The Japanese Cruisers "Izumo" and "Yakumo," under the command of Vice-Admiral Seizo Kobayashi, arrived at Port Adelaide on June 25, 1928, and secured in the outer harbour. Prince Takamatsu, a younger brother of the Emperor of Japan, is serving in this squadron, which is engaged in a training cruise.

Friday, June 29. Adelaide—Melbourne. 475 Miles. (6 hrs. 20 mins.; 75 knots.)—This was followed by a flight of 15 mins. from St. Kilda to Point Cook. A fine morning, sky 0.1 clouded, water calm, wind N.E. 5 knots. Moorings were slipped at 07.10 and, after taxiing to warm the engines, the Flight took off in formation in the channel by the mooring site at 07.25 in an average of 35 secs., carrying 500 gallons of petrol each. The "Widgeon" II took off from the aerodrome and escorted the Flight to Melbourne. The course followed was down the coast to Glenelg, across the peninsula to Port Elliot and thence to C. Jaffa and Robe, which was circled in formation in accordance with a request received from the Mayor, and thence along the coast, cutting off C. Otway, to Port Phillip Bay. From Robe to Rivoli Bay there are several lakes which might be suitable as emergency landing places for seaplanes; Victor Harbour and Portland appeared to be sheltered, and there are several bays along the route which would afford shelter in certain winds. The weather during the flight was good, with N.E. winds from 10 to 15 knots, for the first four hours, which gradually changed to N. and N.W. and decreased; the sky clouded over between 09.30 and 10.30, when it again cleared. There was a slight to moderate sea with a southerly swell till C. Otway, after which it was calm. The average height was 1,000 ft., with the strut temperature varying from 39 to 43.

Near the entrance to Port Phillip Bay the Flight was joined by a Fairey 3D (Eagle engine) and a Southampton, both of the R.A.A.F.; it then proceeded to Point Cook, where it was joined by an escort of 11 landplanes of the R.A.A.F., flying in formations (D.H.9a, D.H.9, and Moths); the coast was followed to St. Kilda, where the Flight landed in formation at 13.45 (14.15 Melbourne time), which was the time appointed by the Air Board, Melbourne. The Flight secured to buoys laid off St. Kilda pier. The "Widgeon" II landed at St. Kilda and moored up there, the remainder of the escort flew back to Point Cook, after the Flight had landed. The senior officer of each flying-boat was taken ashore to St. Kilda pier and were greeted there by the Premier of Victoria (Mr. Hogan), the Minister of Defence (Sir William Glasgow), Admiral Napier, General Sir Harry Chauvel, Group Captain Goble (R.A.A.F.), the Lord Mayor of Melbourne (Sir Steven Morell), the Mayor of St. Kilda, and many others. There was a large crowd at St. Kilda to see the arrival of the Flight.

As soon as the reception was over the officers returned to the flying boats. Three of the boats took off in formation and flew to Point Cooke, followed shortly afterwards by S. 1151, which had trouble in starting one engine.

All the flying-boats were brought ashore at Point Cooke by 17.00 and put in the shed there. This is the first time any of the Flight have been under cover since October 14, 1927, when the Flight left Felixstowe.

(To be concluded.)



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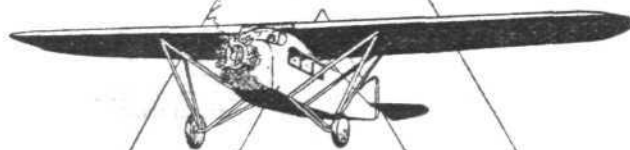
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THE ROYAL AIR FORCE

London Gazette, January 1, 1929

Stores Branch

The follg. Pilot Officers on probation are confirmed in rank and promoted to rank of Flying Officer (October 15, 1928):—H. W. Penney, D. G. McDiarmid.

Flight-Lieut. L. A. K. Butt is placed on retired list at his own request (January 1).

Accountant Branch

The follg. Pilot Officers on probation are confirmed in rank and promoted to rank of Flying Officers (December 3, 1928):—L. Chegwidan, N. Walleit.

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer:—H. Buckingham (November 23, 1928); F. A. B. Fawcett (December 20, 1928); G. V. Kibblewhite (December 20, 1928); G. J. C. Paul (December 20, 1928);

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Flying Officers: (Hon. Flight-Lieut.) R. W. M. Hall, R. W. Pilling, G. H. Bennett and R. C. White, to R.A.F. Depot, Uxbridge; 23.11.28. K. C. Netherton, to Aircraft Depot, India; 23.11.28. R. G. Hennessy, D.S.O., M.C., to H.Q., Transjordan and Palestine; 7.12.28. J. A. E. Inkster, to R.A.F. Depot, Uxbridge, for Administrative duties; 8.12.28. N. W. F. Mason, to No. 600 Sqdn., Hendon; 15.1.29. V. W. Soltan, to R.A.F. Depot, Uxbridge; 4.12.28. G. A. G. Johnston, to No. 28 Sqdn., India; 29.12.28.

Pilot Officers: C. W. Black, to R.A.F. Depot, Uxbridge; 3.12.28. J. A. Lawson and E. C. A. Wheeler, to No. 4 Flying Training School, Egypt, on appointment to Short Service Comms.; 19.11.28. W. H. E. Tew, to No. 4 Flying Training Sch., Egypt, on appointment to Short Service Comms.; 25.11.28. J. E. M. Bainbridge, W. R. C. Wilkins, and B. W. Figgins, to No. 13 Sqdn., Andover; 15.12.28. R. A. Chignell, to No. 12 Sqdn., Andover; 15.12.28. C. Stephenson, W. R. Hartwright, and N. C. Odbert, to No. 26 Sqdn., Catterick; 15.12.28. H. Bailey and V. S. Bowling, to No. 503 Sqdn., Waddington; 15.12.28. N. W. Creasy and W. R. Tope, to No. 504 Sqdn., Hucknall; 15.12.28. E. D. Elliott and A. F. Britton, to No. 502 Sqdn., Aldergrove; 15.12.28. J. B. Mackenzie, to No. 100 Sqdn., Bicester; 15.12.28. J. H. T. Simpson, to No. 101 Sqdn., Bircham Newton; 15.12.28. R. C. Warner and L. E. A. Wright, to No. 10 Sqdn., Upper Heyford; 15.12.28. D. J. Hughes-Morgan, to No. 14 Sqdn., Middle East; 13.12.28.

R. Bance, A.F.M. (December 28, 1928); R. D. Crofton (December 30, 1928). Flying-Officer on probation A. C. S. Irwin is confirmed in rank (December 26, 1928).

The following officers are transferred from Class A to Class C:—Flight-Lieut. D. Craik, D.F.C. (December 27, 1928); Flying Officer C. W. Calder (January 2).

Flight-Lieut. C. A. Elliott is transferred from Class B to Class C (May 24, 1928).

The follg. Flying Officers relinquish their comms. on completion of service: G. J. Holdcroft, H. J. Price (December 23, 1928); H. K. Waterfield (December 31, 1928).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 CITY OF LONDON (BOMBING) SQUADRON.—The follg. Pilot Officer relinquishes his comm. on appointment to a Short Service Comm. in the R.A.F.:—J. A. Brown (December 28, 1928).

The undermentioned Pilot Officers are posted to the R.A.F. Depot, Uxbridge, on appointment to Short Service Comms. (on probation), with effect from 28.12.28:—F. E. Abbott, F. R. Bevan, J. A. Brown, C. R. Crow, I. S. Douglas, G. M. Easton, E. Esmonde, J. W. C. Glen, D. B. Knapp, H. V. L'Amey, A. E. V. Mathias, W. S. Monroe, G. B. Musson, A. T. Orchard, G. M. Payne, T. J. Rees, G. H. Robertson, E. G. Sharp, J. A. Simpson, G. R. Warner, and E. F. Wheeler.

Stores Branch

Flying Officers: F. C. C. B. Hichens, to No. 3 (Indian) Wing H.Q., India; 22.11.28. F. R. Lines, to Aircraft Depot, Iraq; 29.11.28. J. E. Welman, to Aircraft Park, India; 22.11.28. G. J. Gaynor, to H.Q., Iraq; 28.12.28.

Accountant Branch

Wing Commander: C. G. Murray, O.B.E., to R.A.F. Depot, Uxbridge; 5.12.28.

Squadron Leader: A. R. Thomas, to H.Q., Inland Area, Stanmore; 1.1.29.

Medical Branch

Wing Commander: R. H. Knowles, M.D., D.Ph., to R.A.F. Depot, Uxbridge; 9.12.28.

Squadron Leader: H. S. C. Starkey, O.B.E., M.D., M.A., to R.A.F. Depot, Uxbridge; 1.1.29.

Flight-Lieut.: J. B. Gregor, to R.A.F. Depot, Uxbridge; 16.12.28. A. Dickson, M.B., to Princess Mary's R.A.F. Hospital, Halton; 29.1.29.

Chaplains Branch

Rev. M. H. Edwards, O.B.E., B.A., to R.A.F. Training Base, Leuchars; 1.1.29. Rev. C. W. Hall, to H.Q., R.A.F., Halton; 3.12.28.

AIR MINISTRY NOTICES TO AIRMEN

Continental Air Route: Risks of Collision

1. In order further to obviate the risk of collision on the Continental air routes, pilots of privately-owned aircraft *not equipped with W/T*, are warned against flying at any time in the vicinity of the normal Croydon-Edenbridge-Ashford-Lympne air route, or of any of the routes in force in conditions of bad visibility, as defined in Notice to Airmen No. 53 of 1927.

2. No restriction as to the use of either Croydon or Lympne aerodrome by such aircraft is implied by the above.

3. Previous Notice.—Notice to Airmen No. 53 of 1927 is qualified by this notice.

Corrigendum to N/A No. 83 of 1928.—For "Varden" in para. 2, read "Marden."

(No. 2 of 1929.)

Issue of Class "B" Pilots' Licences: Revised Requirements

1. As from April 1, 1929, the requirements for the issue of Class "B" Pilots' Licences will be amended.

From that date the practical tests to be carried out by applicants for such licences who are not qualified Royal Air Force pilots will be extended.

In addition to the revised practical tests applicants will be required to produce proof that, during the preceding two years, they have carried out at least 100 hours' flying and at least thirty landings as pilots in sole charge of a flying machine.

2. After March 31, 1929, no new class "B" licences will be issued under the existing regulations which are laid down in the Air Navigation Directions 1928 (A.N.D.7), except in the case of candidates who have satisfied all the requirements of the regulations for the issue of such licences on or before that date.

3. Amendments to the Air Navigation (Consolidation) Order 1923 and to the Air Navigation Directions (A.N.D.7) will shortly be published specifying the revised requirements for the issue of the above-mentioned licences.

(No. 3 of 1929.)

NOTICES TO GROUND ENGINEERS

Modifications to Aircraft and/or engines subsequent to the issue of certificates of airworthiness

1. The attention of Ground Engineers is directed to the revised regulations with regard to "modifications" to aircraft, as laid down in the Air Navigation Directions 1928 (A.N.D. 7).

2. Para. 35 (1) of these directions requires that the approval of the Secretary of State shall be obtained for any modifications which affect the safety of an aircraft in respect of which a Certificate of Airworthiness is in force.

3. Para. 57 requires the inspection and certification in the appropriate log book of such modifications by a qualified ground engineer or by an authorised representative of an approved firm.

4. Ground Engineers must, before inspecting and certifying modifications, ensure that design approval has been obtained, and must include a reference to the authority received in the log book entry.

(No. 1 of 1929.)

Tightening Cylinder Head Holding Down Studs

1. The attention of all ground engineers is directed to the importance of avoiding overtightening the nuts on studs and bolts subjected to pulsating load, e.g., cylinder holding down studs, connecting rod bolts, etc.

2. Particular attention is necessary on engines where the cylinders and/or heads are retained by long external studs, it being essential in all such cases that due allowance is made when tightening the nuts, for the increased tension on the studs which will arise when the engine is heated.

3. No attempt should be made to remedy a leaky joint between a cylinder and cylinder head on such engines by overtightening the nuts as this will invariably lead to the parts being subjected to excessive loads and distortion. All such leaks should be rectified by attention to the joint itself.

(No. 2 of 1929.)

Avro Avian Aircraft: Modification to Bottom Rear Hinge Joint

1. The modification described herein must be embodied on all existing "Avian" aircraft fitted with retractable undercarriage to Drg. No. K. 974.3 before any such aircraft is submitted for re-inspection for renewal of the Certificate of Airworthiness. Ground engineers should therefore ensure that all such aircraft for which they are responsible have this modification embodied.

This requirement is applicable to "Avian" aircraft of the following types: Avian Mark I, Avian Mark II, Avian Mark III, Avian Mark IIIA.

2. The modification consists of sawing off the existing lug on the bottom centre section spar and replacing this by the part shown on sketch No. 2814, dated June 22, 1928.

3. Attention is drawn to the necessity for inspection, before each flight, of the bottom rear hinge joint for any indication of fracture between the roll and the plate until the modification is incorporated.

4. No Certificate of Airworthiness will be issued or renewed in respect of "Avian" aircraft fitted with retractable undercarriage unless the above modification has been embodied.

5. **Cancellation.**—Notice to ground engineers No. 3 of 1928 is hereby cancelled.

(No. 3 of 1929.)

FLIGHT CADETSHIPS AND "SIR CHARLES WAKEFIELD" SCHOLARSHIPS AWARDS

THE Air Ministry announces:—Aircraft Apprentices W. S. Reed, T. N. Coslett, T. Q. Horner, W. H. Hodgkinson, from No. 1 School of Technical Training (Apprentices), Halton and Aircraft Apprentice W. T. H. Nichols from the Electrical and Wireless School, Flowerdown, have been selected for cadetships at the R.A.F. Cadet College, Cranwell, on the result of the examinations held on completion of their three years' training as aircraft apprentices.

"Sir Charles Wakefield" Scholarships valued at £75 each, have been awarded to Flight Cadet M. W. L. Baker on the result of the recent competitive examination for entry into the R.A.F. Cadet College, and to Flight Cadet W. S. Reed.

The "Hyde-Thomson Memorial Prize," valued at about £33, has been awarded to Flight Cadet W. T. H. Nichols.

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns

THE "MOTOR CYCLE OF THE AIR"

[2181] With reference to Mr. C. W. Tinson's correspondence re the "Beetle" light aeroplane, which appeared in FLIGHT of January 3, 1929, I should like to make a few remarks concerning the matter therein.

In the first place, I do not think that the construction of the machine can be called "more or less normal," but rather a combination of the greater part of the simplicity of the stressed surface type with the lightness and strength of the built-up type. With the high predicted rate of production, a few well-chosen jigs and press tools make the assembly of parts an extremely simple operation. The small size of machine enables one to use methods of construction considered absurd on a larger machine.

Concerning the statement that thin duralumin, is liable to buckle when flat, one can, of course, do a great deal with simple corrugations.

I hope to give a detailed description of the construction of this machine when the detail drawings are completed shortly.

Of course, the duralumin construction can only be cheaper than wood for the assumed high rate of production, and as a matter of fact, I am also getting out drawings of the machine in wood to suit low production.

My wooden construction appears to be very much like Mr. Tinson's, except that I consider spruce planks cheaper than three-ply for wing surfaces. When thinking of wood machines, one must always bear in mind the fact that the Colonies appear to be demanding all-metal machines to withstand extremes of climate.

The question of lowest cost per machine is rather troublesome, owing to the lack of suitable data to work upon. I think, however, that a machine of this type that is easy to fly, should sell quite well at about £400, especially in America, where anything connected with aviation appears to sell easily.

When examining cost of production, one naturally turns to the records of an ordinary British Aircraft firm and finds that prices are high. This is due to the fact that most of our firms build machines almost entirely for the Service. The Air Ministry must have the best possible aircraft, and a large amount of experimental work may be necessary before a machine is accepted for production, even then, if several firms build machines to a given specification, and only one is accepted, the other Companies have put in a huge amount of work and have built only one machine each. This brings up the cost of all machines built by those firms for a period. Again, only the best materials can be used on Service Aircraft, whereas a slightly inferior quality at a much lower price could be used on small private single-seaters. As an example, the stainless steel often called for on Air Ministry machines, could be supplanted by mild steel on the "Beetle," and the cost of material would be more than halved. Thus, it will be seen that one cannot calculate the price of a small aeroplane, built by a firm concentrating on this type, by comparison with Service Aircraft.

As far as I can determine, a suitable firm properly organised to suit the type of machine under discussion should be able to cut down expenses all round, and I think that the following prices should hold good for "Beetles" under production:—

No. of Machines per annum	Approximate Cost per machine
50	£330—£350
300	£300
600	£250—£275

The last rate of production may seem high, but judging from the present day tendency of the public in all parts of the world to become air-minded, and also from the predictions of various experts on the subject, I think that this figure is quite possible. In this case, the "Beetle" could be almost entirely a press tool job, thus attaining the lowest price.

In conclusion, I do not think that there is any point in further discussion on the possible prices of single-seater light aeroplanes until several machines have been built.

ROGER S. DICKSON

Southampton, January 8, 1929.

IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910.)

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1927 being given in FLIGHT, January 19, 1928.

	Imports.		Exports.		Re-Exports.	
	1927.	1928.	1927.	1928.	1927.	1928.
	£	£	£	£	£	£
Jan. ..	1,850	1,220	49,021	157,598	—	330
Feb. ..	679	1,772	63,080	118,622	—	345
Mar. ..	7,087	4,805	106,478	125,901	2,270	1,307
April ..	822	2,904	71,190	134,126	785	3
May ..	1,258	2,513	82,708	118,804	640	640
June ..	1,249	5,916	149,907	86,245	162	1,317
July ..	1,798	2,025	104,167	108,746	750	521
August ..	2,453	2,566	78,742	97,303	—	100
Sept. ..	2,045	4,240	61,946	72,475	59	3,183
Oct. ..	1,013	6,098	93,004	77,027	45	315
Nov. ..	3,014	3,825	111,202	115,219	—	1,615
Dec. ..	2,272	4,894	117,241	122,510	—	520
	25,440	42,778	1,088,686	1,334,576	4,711	10,196

PUBLICATIONS RECEIVED

Supercharger Unit as Fitted to the Jaguar IV Engine. Air Publication 1346. H.M. Stationery Office, Kingsway. London, W.C. 2. Price 1s. net.

The Airplane and Its Engine. By C. H. Chatfield, S.M. and C. F. Taylor, M.E. McGraw-Hill Publishing Co., Ltd., 6-8, Bouverie Street, London, E.C. 4. Price 12s. 6d.

Brochure of the R.A.F. Far East Flight. The Supermarine Aviation Works, Ltd., Southampton, and D. Napier and Son, Ltd., Acton, London, W.

Abstracts of Scientific and Technical Publications from the Massachusetts Institute of Technology. No. 1. January, 1928. No. 2. July, 1928. The Massachusetts Institute of Technology, Cambridge, Mass., U.S.A.

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(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

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24,526. J. P. DAVIES. Aircraft. (302,630.)
27,312. SOC. ANON. DES ATELIERS D'AVIATION L. BREGUET, and L. BREGUET. Screw propellers. (302,755.)

APPLIED FOR IN 1928

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- 5,177. J. DE MEO. Counter-propellers for aerial craft, etc. (302,835.)
7,602. F. WASILOWSKI. Sheds for aircraft. (302,842.)

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